

UNIVERSIDAD COMPLUTENSE DE MADRID
FACULTAD DE ESTUDIOS ESTADÍSTICOS



TESIS DOCTORAL

**Data analysis on inequalities between men and women:
stereotypes, gender norms and shared responsibility in
childcare**

MEMORIA PARA OPTAR AL GRADO DE DOCTOR

PRESENTADA POR

Sabina Belope Nguema

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Madrid

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FACULTAD DE ESTUDIOS ESTADÍSTICOS
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Memoria para optar al grado de doctor presentada por

Sabina Belope Nguema

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Madrid, 2019



UNIVERSIDAD
COMPLUTENSE
MADRID

**DECLARACIÓN DE AUTORÍA Y ORIGINALIDAD DE LA TESIS
PRESENTADA PARA OBTENER EL TÍTULO DE DOCTOR**

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titulada:

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GENDER NORMS AND SHARED RESPONSIBILITY IN CHILDCARE

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To my loving and supportive parents, Sabino and Cecilia.

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RESUMEN (ESPAÑOL)

TÍTULO

DATA ANALYSIS ON INEQUALITIES BETWEEN MEN AND WOMEN: STEREOTYPES, GENDER NORMS AND SHARED RESPONSIBILITY IN CHILDCARE (ANÁLISIS DE DATOS SOBRE LAS DESIGUALDADES ENTRE HOMBRES Y MUJERES: ESTEREOTIPOS, NORMAS DE GÉNERO Y CORRESPONSABILIDAD EN EL CUIDADO DE HIJOS).

INTRODUCCIÓN

La presente tesis doctoral forma parte del Proyecto del Plan Nacional de I+D+i FEM2014-56723-P obtenido por el grupo de investigación Análisis de Datos en Estudios Sociales y de Género y Políticas de Igualdad (AEDIPI) de la Facultad de Estudios Estadísticos de la Universidad Complutense de Madrid (UCM).

La principal motivación de esta tesis es contribuir a la comprensión de algunas de las causas últimas de la desigualdad de género observadas en el mercado laboral. De hecho, las contribuciones recogidas en esta tesis pueden enmarcarse en dos áreas de desigualdad de género estructural (o causas últimas de la desigualdad): (1) la falta de corresponsabilidad entre hombres

y mujeres en el cuidado de hijos y familiares; y (2) la persistencia de estereotipos de género tradicionales que condicionan la elección de estudios de los jóvenes, lo que da lugar a una infrarrepresentación de las mujeres en profesiones técnicas como las ingenierías y las tecnológicas (denominadas STEM).

SÍNTESIS

La perspectiva de la falta de corresponsabilidad entre hombres y mujeres en el hogar y en el cuidado de hijos se aborda en los tres primeros capítulos empíricos que recogen tres investigaciones, o artículos, clasificables en esta área. El primer capítulo empírico (cap. 3) examina en qué grado la existencia de una cultura corporativa poco amigable con la conciliación masculina dificulta la implicación de los padres trabajadores españoles en el cuidado de sus hijos pequeños (y en el uso de las medidas de conciliación), y aumenta su conflicto entre trabajo y familia. El segundo capítulo empírico (cap. 4) examina cómo las políticas públicas sobre los permisos de paternidad y maternidad, junto con las horas de trabajo de los progenitores, pueden afectar a la corresponsabilidad en el cuidado de los hijos pequeños de las parejas asalariadas en España e Islandia. Prestamos especial atención al análisis de la participación relativa en las actividades de cuidado infantil de los padres varones trabajadores en comparación con las madres trabajadoras. El objetivo del tercer capítulo (cap. 5) es medir las actitudes de los jóvenes universitarios de España y Ghana (los cuales no tienen aún responsabilidades familiares y no se han incorporado todavía al mercado laboral) respecto a la anticipación del conflicto entre el trabajo y la familia. En particular, intentamos examinar cómo la anticipación de dicho conflicto afecta a la intención futura de conciliar la vida laboral y familiar mediante el uso de las medidas de conciliación ofrecidas por las empresas; además, queremos saber en qué grado los jóvenes utilizarán los permisos parentales.

La perspectiva de la existencia de estereotipos de género tradicionales que influyen en la elección de estudios se aborda en el último capítulo empírico. El cuarto capítulo empírico (cap. 6) es un diseño experimental que trata de detectar los sesgos de género que los potenciales tutores pueden tener al asesorar a los adolescentes sobre la elección de carrera. Presentamos un perfil ficticio de una persona de 15 años (llamada Manuel o María, con dos posibles niveles de expediente académico) a los participantes en nuestro estudio (estudiantes universitarios de España y Colombia) y les pedimos que evaluaran su capacidad matemática y que le aconsejaran sobre si estudiar o no ingeniería en el futuro. Nuestros resultados sugieren que persiste un grado

significativo de sesgo de género en la atribución de la capacidad matemática y en la recomendación de estudiar ingeniería.

En relación con la metodología utilizada en estas cuatro investigaciones, el desarrollo de la tesis ha permitido hacer un uso extensivo del enfoque de Andrew F. Hayes sobre la mediación, la moderación y el análisis condicional de procesos, combinado con la aplicación de métodos de modelización de ecuaciones estructurales (SEM).

CONCLUSIONES

La principal conclusión de la tesis, siguiendo a la socióloga Barbara Risman, es que el género es una construcción social que actúa en tres niveles: individual, interaccional e institucional.

En cuanto a la dimensión institucional, podemos destacar dos conclusiones. En primer lugar, en el primer capítulo empírico, para el caso de España, presentamos evidencia empírica de que si las empresas no tienen un sesgo en contra de los hombres en las políticas de conciliación y tienen una conducta ejemplarizadora, ambos hechos son factores organizativos que expanden la capacidad de los padres trabajadores en el campo de la conciliación de la vida laboral y familiar.

En segundo lugar, lo que muestra el segundo capítulo empírico es que el uso del permiso de paternidad del padre aumenta su participación en el cuidado de hijos, tanto directa como indirectamente a través de la reducción de las horas de trabajo. En España, a medida que aumenta la jornada semanal de las madres aumenta la participación de los padres en las labores de cuidados. Sin embargo, nuestro estudio revela que la duración de los permisos de maternidad no está relacionada con la participación del padre en el cuidado de sus hijos.

En cuanto a la dimensión individual, el tercer capítulo empírico revela que existen diferencias de género en el uso futuro del permiso de paternidad/maternidad y en la intención de utilizar las medidas de conciliación en el futuro. En España y Ghana, el número de semanas de permiso de maternidad que tomarían las estudiantes es mayor que el número de semanas de permiso de paternidad que tomarían los estudiantes varones.

En cuanto a la dimensión interaccional, el cuarto capítulo empírico ofrece evidencia empírica causal sobre la existencia de sesgo de género en la atribución de la capacidad matemática y en la recomendación de estudiar ingeniería. Expresado en términos de doble

estándar: en promedio, una chica necesita un registro académico más alto antes de que se le recomiende estudiar ingeniería con la misma intensidad que a un chico.

Finalmente, la interacción de estos tres niveles (individual, interaccional e institucional) es lo que construye y reproduce la desigualdad de género en la sociedad.

ABSTRACT (ENGLISH)

TITLE

DATA ANALYSIS ON INEQUALITIES BETWEEN MEN AND WOMEN:
STEREOTYPES, GENDER NORMS AND SHARED RESPONSIBILITY IN CHILDCARE.

INTRODUCTION

The present doctoral thesis is part of the National I+D+i Plan Project, FEM2014-56723-P obtained by the research group Data Analysis In Social And Gender Studies And Equality Policies (AEDIPI) of the Faculty of Statistical Studies of the Complutense University of Madrid (UCM).

The main motivation for this thesis is to contribute to the understanding of some of the root causes of gender inequality observed in the labor market. Indeed, the contributions collected in this thesis can be framed in two areas of structural gender inequality (or root causes of inequality): (1) the lack of shared responsibility between men and women in child and family care; and (2) the persistence of traditional gender stereotypes that condition the choice of studies of young people, eventually leading to an under-representation of women in engineering and technology (STEM professions).

SYNOPSIS

The perspective of the lack of shared responsibility between men and women in the home and in childcare is addressed in the first three empirical chapters that bring together three investigations, or articles, classifiable in this area. The first empirical chapter (chap. 3) examines the causes of the corporate culture that hinder the involvement of Spanish working fathers in the care of their young children and increase their work-family conflict. The second empirical chapter (chap. 4) examines how state policies on paternity and maternity leave, along with parental working hours, can affect shared responsibility for childcare among wage-earning couples with small children in Spain and Iceland. We pay special attention to analyzing the relative participation in childcare activities of working fathers compared to working mothers. The aim of the third chapter (chap. 5) is to measure the attitudes of young adults in Spain and Ghana, who do not yet have family responsibilities and who have not yet entered the labor market, towards anticipating a work-family conflict. In particular, we attempt to examine how this conflict affects their willingness to reconcile work and family life through the use of reconciliation measures offered by companies and, in particular, how it affects anticipated use of parental leave.

The perspective of the existence of traditional gender stereotypes that influences the choice of studies is addressed in the last empirical chapter. The fourth empirical chapter (chap. 6) is an experimental design that tries to detect gender biases that potential tutors may have when advising teenagers on their career choice. We presented a fictional profile of a 15-year-old person (called Manuel or María, with two possible levels of academic record) to the participants in our study (university students from Spain and Colombia) and asked them to evaluate his/her mathematical ability and advise him/her on whether or not to study engineering in the future. Our results suggest that a significant degree of gender bias persists in the attribution of mathematical ability and in the recommendation to study engineering.

In relation to the methodology used in these four investigations, the development of this thesis has made it possible to make extensive use of Andrew F. Hayes's approach to mediation, moderation, and conditional process analysis, combined with the application of methods of structural equation modeling (SEM).

CONCLUSIONS

The main conclusion of this thesis, according to the sociologist, Barbara Risman, is that gender is a social construction that acts on three levels: individual, interactional and institutional.

Regarding the institutional dimension, we can highlight two conclusions. Firstly, in the first empirical chapter, in the case of Spain, we present empirical evidence of the fact that the lack of bias against men in reconciliation policies and exemplary behavior are both organizational factors that expand the capability of working fathers in the field of work–family balance.

Secondly, what the second empirical chapter shows is that fathers' use of leave increases their involvement in care, both directly and indirectly, through the reduction in working hours. In Spain, we present empirical evidence of the fact that the longer working week of mothers increases fathers' involvement. However, our study has revealed that mothers' leave length is not associated with fathers' involvement in the care of their children.

Regarding the individual dimension, the third empirical chapter reveals that there are gender differences in the anticipated use of paternity/maternity leave and in the intention to use family-friendly measures in the future. In Spain and Ghana, the number of weeks of maternity leave that would be taken by female students is higher than those taken by male students.

Regarding the interactional dimension, the fourth empirical chapter offers causal empirical evidence of the existence of a gender bias in the attribution of mathematical ability and in the recommendation to study engineering. Expressed in terms of double standards: on average, the female target needs a higher academic record before she is recommended to study engineering to the same extent as the male target.

Finally, the interaction of these three levels (individual, interactional and institutional) is what constructs and reproduces gender inequality in society.

PART I.
INTRODUCTION AND EMPIRICAL
METHODOLOGY

1

INTRODUCTION

1.1. Direct and indirect causes of the gender wage gap

The main aim of this thesis is to contribute to the understanding of some of the root causes of gender inequality observed in the labor market. Indeed, the contributions collected in this thesis can be framed in two areas of structural gender inequality (or root causes of inequality): (1) the lack of shared responsibility between men and women in child and family care; and (2) the persistence of traditional gender stereotypes that condition the choice of studies of young people, eventually leading to an under-representation of women in engineering and technology.

This doctoral thesis is part of the National I+D+i Plan Project, FEM2014-56723-P obtained by the research group Data Analysis In Social And Gender Studies And Equality Policies (AEDIPI) of the Faculty of Statistical Studies of the Complutense University of Madrid (UCM).

Our approach can be illustrated using the gender wage gap as a reference (which is the result of all other existing gender inequalities). According to data from the Annual Wage Structure Survey (INE, 2017) in Spain, the (unadjusted) gender wage gap was 21.92% in 2017¹.

Figure 1.1 shows a scheme in which the main direct and indirect determinants of the gender pay gap are distinguished (Fernández-Cornejo & Escot, 2013). The **direct determinants** of the gender wage gap (expressed in red in this figure) are:

- The lower participation of women in the labor market (there are more women than men working part time, etc.).
- Low presence of women in leadership positions (as a result of the cumulative barriers to professional promotion that women encounter, including the so-called “glass ceiling”).
- The occupational (and sector) gender segregation in the labor market (there are feminized occupations, often related to caring activities, and masculinized occupations; with equal qualification requirements, feminized occupations normally have a lower status and a corresponding lower salary).
- Discrimination (implicit or explicit biases in the evaluation of women workers)².

These four factors, in addition to individually generating the wage gap, also interact with each other, increasing their effect on this gap.

¹ The gender wage gap is calculated as the ratio of the difference between the average gross annual wage of men and women and the average gross annual wage of men.

² The Oaxaca wage decomposition methodology is usually used to distinguish the effect on the gender wage gap from discrimination (which is not directly measurable) and from the other measurable characteristics of workers (working hours, experience, seniority, occupation, sector, etc.) (Blinder, 1973; Heckmann, 1979; Oaxaca, 1973). This methodology tries to break down the wage differential (the wage gap) into two parts:

- a) The portion that comes from the fact that men and women have on average different labor characteristics (different human capital).
- b) The part not explained by these labor characteristics, which is attributed to the effect of direct discrimination and other similar biases.

Empirical literature shows that around 50% of the wage gap remains unexplained (De la Rica, 2010; Moral-Carcedo, García Belenguer-Campos, & Bote Álvarez-Carrasco, 2012). On the other hand, even the “explained” part comes from situations of prior inequality, such as those analyzed in this thesis.

But where do these direct or proximate causes of the wage gap originate? What are the **root causes of the wage gap?**³ As shown in Figure 1.1, the root cause would be the **persistence of traditional social gender norms** (“gender norms”), which is reflected in the persistence of a series of traditional gender stereotypes, attitudes and roles.

As can be seen in the bottom-left of the figure, the effect of traditional gender norms (in interaction with economic incentives) explains the persistence of the traditional sexual division of labor between some heterosexual and cisgender couples, which leads, for instance, to an insufficient involvement of men in caring responsibilities. This **insufficient father involvement in childcare** is one of the factors that explains phenomena such as the penalty for maternity (manifested in results such as a lower participation of women in the labor market, low presence of women in business leadership positions, or in the form of statistical discrimination against mothers or potential mothers).

On the other hand, to the right of the figure, it is shown that these traditional gender norms produce a biased (in terms of gender) choice of careers by young people, which leads to the perpetuation of the phenomenon of **gender segregation in the field of study**. In turn, this gender segregation in the study areas explains, to a large extent, the occupational gender segregation observed in the labor market.

³ This is similar to what happens with the Russian Matryoshkas: you open one and another appears inside.

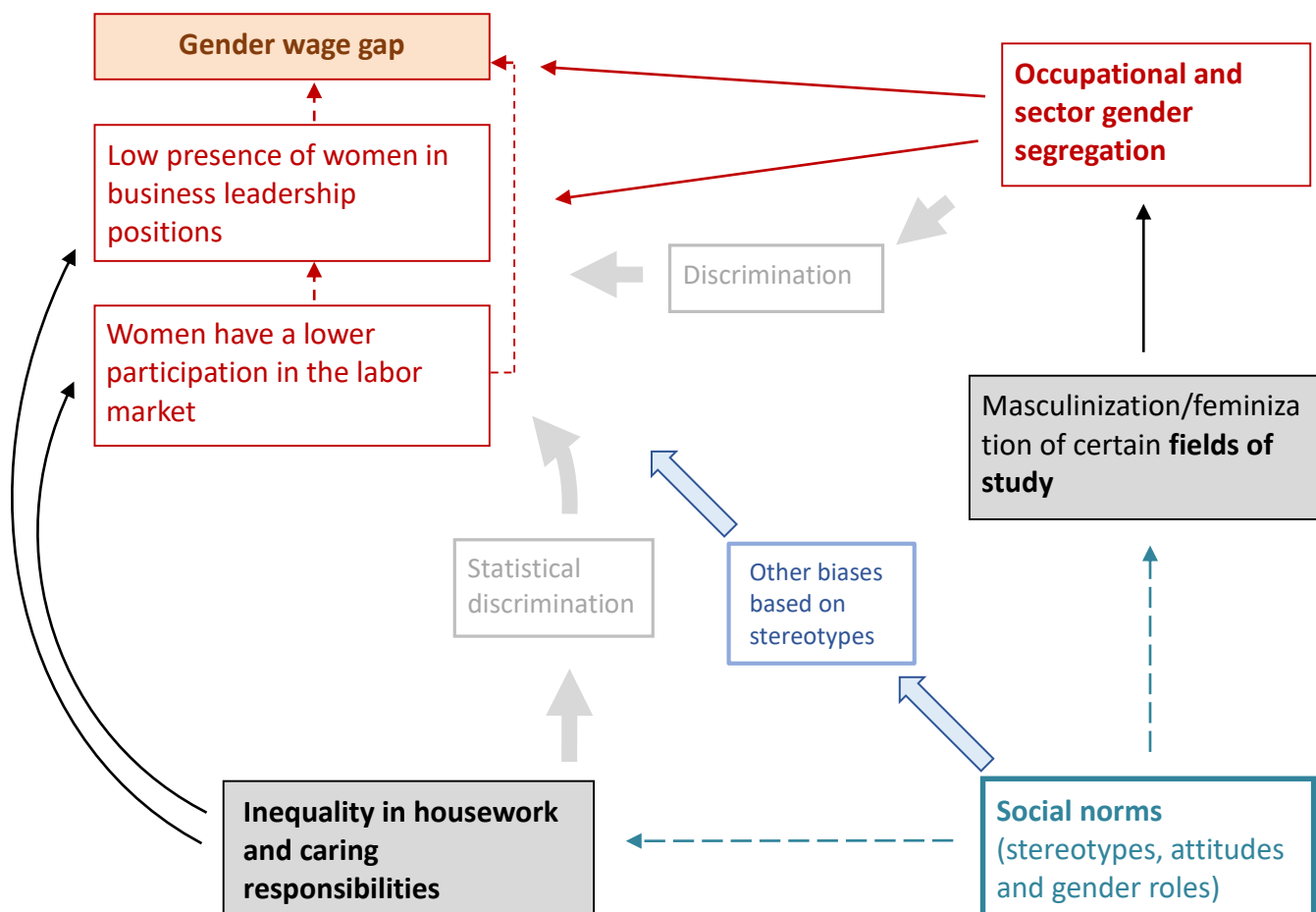


Figure 1. 1. Direct and indirect causes of the gender wage gap

In this doctoral thesis, the following are presented:

- a) **Three pieces of research** that address the problem of a **lack in equal sharing of responsibilities** between women and men in childcare.
- b) **One piece of research** that addresses the **career choice of girls and boys** (analysis of gender biases that potential tutors may have when advising teenagers on their career choice).

In terms of the scheme proposed in Figure 1.1, this means that this thesis addresses two of the indirect or root causes of the wage gap⁴. These two areas of inequality are justified and discussed in the next two sections.

1.2. Lack of shared responsibility between men and women in the use of measures to reconcile work and family life and in household and child care tasks

The attitude of fathers towards the care of children has undergone a transformation in recent decades and in this sense, it is referred to as a new father figure.

A classical conceptualization of paternal involvement has been offered by Lamb, Pleck, Charnov, and Levine (1985, 1987). They proposed that **paternal involvement** should consist of three dimensions: **interaction** (a father's direct contact with his child through caring and shared activities); **availability** (potential availability for interaction, accessibility to the child); and **responsibility** (e.g. making decisions for the child). Implicit in these dimensions is the notion of positive paternal involvement, which is likely to promote healthy development in the child (Habib, 2012).

A classification of fathers according to their level of involvement is offered by Kaufman (2013). In the United States, Kaufman (2013) conducted seventy semi-structured interviews with fathers. She differentiated three types of fathers: “**old dads**” (traditional fathers), “**new dads**” (fathers who seek a better work-family balance), and “**superdads**” (fathers who

⁴ Our approach is influenced by Barbara Risman (2004). According to Risman, gender is a social construction that acts on three levels (Risman & Davis, 2013, p. 733):

- 1) Individual (“differences and similarities between women and men as individuals”). Examples of social processes of this dimension are socialization, identities, etc.
- 2) Interactional (“stability of and changing expectations we hold for each sex during social interaction”). Examples of social processes of this dimension are cultural/status expectations, cognitive bias, etc.
- 3) Institutional (“mechanisms by which gender is embedded into the logic of social institutions and organizations”). Examples of social processes of this dimension are organizational practices, legal regulations, etc.

The interaction of these three levels is what constructs and reproduces gender inequality in society.

significantly adjust their work to have more time with their families). One of her conclusions was that “there has been a particularly strong shift in men’s attitudes that has brought convergence (with mothers) in beliefs about work and family roles.” In addition, literature seems to indicate that there is a growing number of fathers who feel they should be actively involved in looking after their young children, and so are potential users of reconciliation measures.

Despite the modern expectations for men to become carers (Adler & Lenz, 2017; Aumann, Galinsky, & Matos, 2011; Kimmel, 2017, Chapter 6), the family context does not always find sensitivity in a work environment where there is an organizational culture that revolves around the idea of the **ideal worker** (an individual who must be available for the company and work long hours at the expense of sacrificing his personal and family life) (Rehel & Baxter, 2015). Kaufman (2013), in her interviews, found that some fathers believed that their companies were “resistant workplaces”: “Some men feel discouraged by employers and co-workers from taking leave. Employers may resist the notion that fathers want to be actively engaged in family life”.

In practice, many fathers see themselves with limited room for maneuver to effectively opt for the use of reconciliation measures, which are available in the organizations in which they work. In this context, many fathers feel that their capability to choose freely is limited. This capability to choose freely is what is known as “**agency to choose**”, i.e. the capability to do what one would like to do (Sen, 1989).

What can fathers who want to reconcile work and family life do? To answer this question, we present two possible answers:

- a) As a possible solution to this conflict, companies offer family-friendly measures (FFM) as reconciliation measures to their workers with family responsibilities (some common FFM are: flexible working schedule, compressed working week, reduced working hours, teleworking, remote working...).
- b) Several studies show that another (complementary) solution is the introduction of laws that grant rights to fathers to reconcile their work and family life, such as paternity leave, which is an effective tool to reduce the gap between the theoretical right and the real possibility of making use of a conciliation measure (Haas & Hwang, 2007).

In any case, progress in the workplace is very slow. There are fathers who want to use reconciliation measures, but they do not take advantage of them.

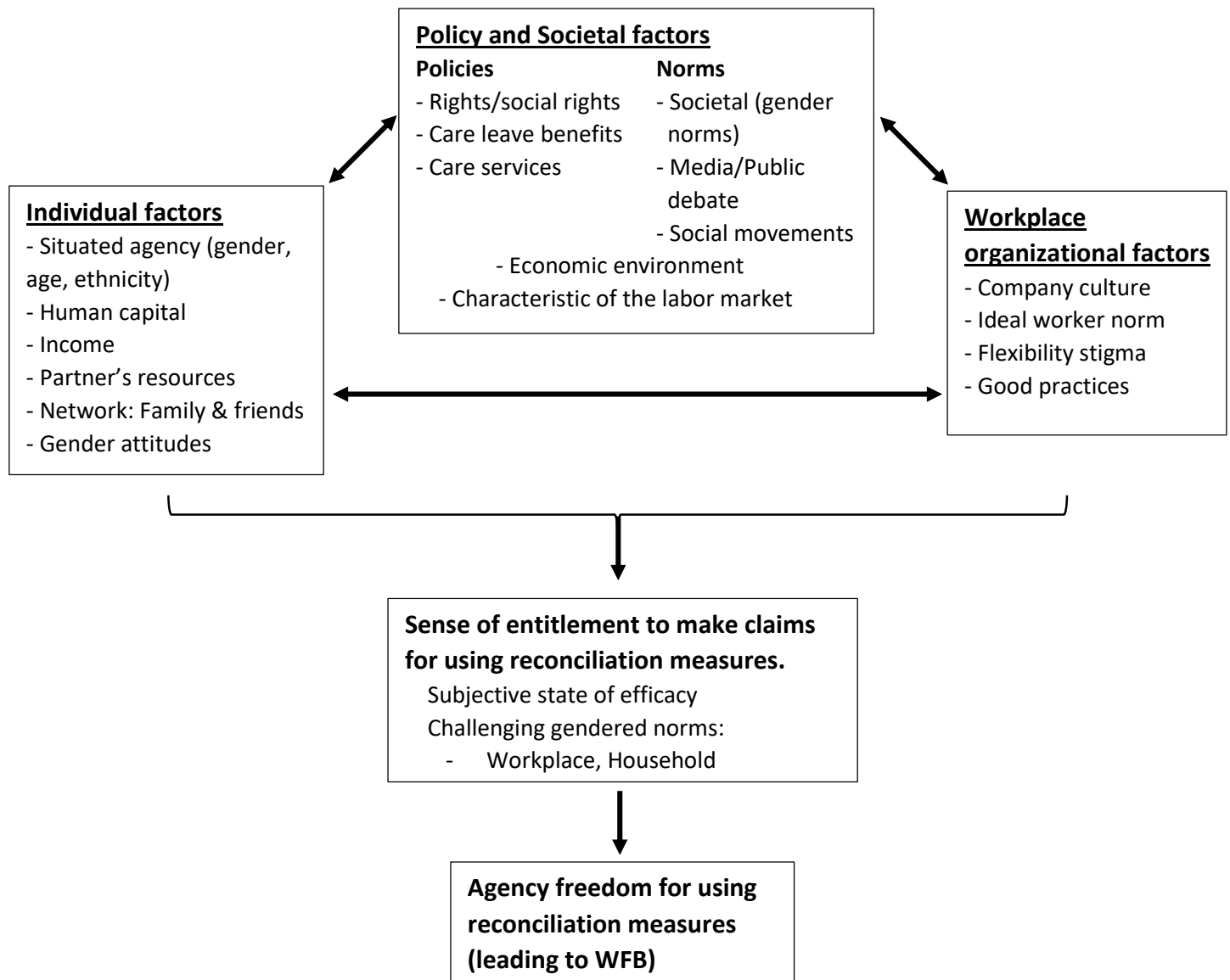
Why do the aforementioned changes towards a more involved fatherhood not entail a greater use by fathers of the reconciliation measures offered by their employers? To provide an answer to this question, as shown in Figure 1.2, we distinguish **three types of factors** (which in Amartya Sen's terminology would be "conversion factors"; see Sen, 1989) (Fernández-Cornejo, Escot, & Cáceres, 2019). The first is formed by **individual factors**. Indeed, the ability of the person (and, in particular, of the father) to transform the availability of reconciliation measures into the effective use of them may depend on demographic variables (gender, age, ethnicity, etc.), the economic restrictions of his/her household (earnings, partner's earnings, family network, etc.), and his/her personal attitudes (gender attitudes, etc.).

The second group consists of **policy and societal factors**. They include aspects related to public policies, social norms and existing discourses in the media, which can directly or indirectly contribute to the individual (the father) feeling entitled to make claims for using FFM. For example, an increase in the duration of paternity leave and normalization of the use of this longer leave would allow many fathers to feel entitled to more time off work after having a child.

The third group of conversion factors includes those related to **workplace organizational culture**. Many fathers who would be potential users of the existing FFM, do not request them because they feel that these measures "are not for them". As Burnett, Gatrell, Cooper, and Sparrow (2013) say, "fathers perceive that, while family-friendly policies might in theory be available to 'parents' these are, in practice, targeted at working mothers" (see also Gatrell, Burnett, Cooper, and Sparrow (2015)). In contrast, working in a family-supportive and father-supportive company can mean that the capabilities of the fathers to use FFM (and reach a WFB) will be expanded.

These three types of conversion factors can interact with each other. For example, a father with a high level of education, advanced attitudes towards involvement in child care, and a high-income partner (individual factors) is more likely to work in a father-supportive company (workplace factor), and this fact puts him in a better position to use the existing social rights (policy factor). This interaction between factors would allow this father to have a high sense of entitlement to make use of a reduced workday, for example, to take care of his baby.

Another aspect is that most of the time gender and gender norms impregnate or affect these three types of conversion factors. In this same sense, and following Hobson and Fahlén, (2009), an important aspect of the “**sense of entitlement**” is what they call “the cognitive level”, or “subjective states of efficacy”. The latter is used for challenging and confronting gendered norms and expectations at one’s workplace and among friends and family (for example, rights and social rights, on the one hand, and new policies and discourses, on the other, can create capabilities for challenging gender norms).



Source : Fernández-Cornejo, Escot, & Cáceres (2019).

Figure 1. 2. Three types of conversion factors that explain the capability to balance work and family.

The first empirical chapter (chap.3) of this thesis is going to deal specifically with the third type of factors (workplace organizational factors). Therefore, we formulate this **first research question (RQ)**, which will be addressed in that chapter:

RQ-1: How can the family-supportive and father-supportive culture of companies expand the capability of fathers to reach a work-family balance?

From the **gender construction perspective**, ideas on appropriate gender roles are reinforced through interaction and the gendered division of labor. This is derived from women and men doing the sort of work defined as appropriate for their gender (West & Zimmerman, 1987). However, just as gender is constructed, it can also be deconstructed (Deutsch, 2007). By taking leave after childbirth, fathers may develop greater confidence in caring and become more committed to family life (Kvande & Brandth, 2017; Rehel, 2014). A period of leave for fathers may therefore reshape societal ideas on what it means to be a father.

In theories on household bargaining (Lundberg & Pollak, 1996; Manser & Brown, 1980; McElroy & Horney, 1981), couples strive to reach an agreement on household labor based on the resources they have gained through education and employment. The more equal the couple's resources, the more equally they will divide domestic tasks, including child-rearing. The unequal position of men and women in the labor market may encourage men to commit more time to market work while the home becomes the women's domain. The transition to parenthood may further weaken mothers' bargaining position as they reduce their labor market participation in order to take care of their child. When a father takes leave after childbirth it could be argued that any advantage stemming from being continually employed will diminish. This could then reduce the degree of specialization within the household.

The expected outcome is the same under the gender construction perspective and the bargaining perspective⁵. Fathers who take parental leave will become more involved in caring for their children after the leave period is over (Duvander & Johansson, 2019; Gíslason, 2017). The longer the leave, the more the father becomes involved.

This leads us to formulate the **second research question** which will be analyzed in the second empirical chapter (chap. 4):

RQ-2: What is the relationship between the use of parental leave, their work hours and fathers' participation in the care of their children? To what extent can the policy regime shape this relationship?

Finally, in an international context where the father figure is undergoing a transformation in his expectations and attitudes regarding child care (caused by the

⁵ A broad concept about the work of unpaid care can also be found in the "Care Economy" theoretical approach (Folbre, 2006).

incorporation of women into the labor market and by the approval of new policies on gender equality, such as the extension of the days of paternity leave) it is interesting to discover the **intentions of young male adults to use reconciliation measures** in the future, and in particular, the anticipated use of their paternity leave.

Applying the Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), it is possible to associate the intentions of young adults to use the reconciliation measures with the following attitudes or beliefs: their attitudes towards the idea of actively using the family-friendly measures (FFM) in the future; their subjective norms (support from people from the immediate environment to use FFM in the future); and their perceived behavioral controls to use FFM in the future. Ultimately, TPB allows us to associate young people's intentions to use FFM with their anticipated use of parental leave.

From here, the **third research question** that will be analyzed in the third empirical chapter (chap. 5) is the following:

RQ-3: Are there gender differences in young adults' anticipated use of parental leave and other FFM? To what extent can young adults' attitudes, subjective norms and perceived behavioral controls (towards using FFM) be associated with a greater intention of making use of FFM in the future?

1.3. Gender bias in the recommendation to study engineering based on gender stereotypes

Overall, women remain under-represented in engineering and technology. This is one of the main factors explaining occupational gender segregation and gender pay gap in the labor market. In Spain, they represented 23% of the engineering and technology research staff of public universities in 2015 (MEIC, 2016). This figure is consistent with **low female enrollment rates in courses in this field (engineering and technology)**. For example, in Spain women represented 21.2% of the total number of students enrolled in mechanical engineering in the 2016-2017 academic year, and 11.9% of those enrolled in computer engineering (MECD, 2018).

Research shows that the **disadvantage faced by girls in technological STEM** is the result of the interaction of a range of factors embedded in both the socialization and learning processes. As the expectancy-value theory (Eccles et al., 1993) suggests, these include social,

cultural and gender norms which influence the way girls and boys are brought up, learn and interact with parents, family, friends, teachers and the broader community, and which shape their identity, beliefs, behavior and choices (UNESCO, 2017). On the other hand, mathematical ability is considered a prerequisite for students wanting to enroll for technological courses (Sáinz & Eccles, 2012), in a context in which math-gender stereotypes that disadvantage girls persist (Cheryan, 2012; Shapiro & Williams, 2012; UNESCO, 2017).

The beliefs and expectations of parents, teachers and other tutors can have an important effect on mathematics self-concept and on the career choice of girls and boys (Gunderson, Ramirez, Levine, & Beilock, 2012). However, the beliefs, attitudes and expectations of parents and tutors are themselves influenced by **gender stereotypes**.

The emergence of gender biases in the recommendation to study a particular degree (such as engineering) can be understood in terms of the **“double standards” approach**. Double standards is the practice of using different requirements to interpret the same evidence and, in particular, applying stricter requirements to members of devalued groups (Foschi, 2000).

In the case of career choice, the double standards approach argues that **tutors implicitly use a salient characteristic (the gender of the teenager)** to guide their behavior (in this case, the recommendation to study engineering). The result has biased evaluations, where a stricter standard is used when evaluating the lower status group (in this case, the girl versus the boy). Indeed, the female target needs a higher academic record before she is recommended to study engineering with the same intensity as the male target.

In summary, tutors (parents, teachers, school counselors, older siblings, etc.) may have gender biases when advising teenagers on their career choice. Based on the above, the research question that will be analyzed in the fourth empirical chapter (chap. 6) is the following:

RQ-4: Are there gender biases (or double standards) when potential tutors advise teenagers on their career choice? Are there gender biases (or double standards) in the recommendation to study engineering based on teenagers’ mathematical ability in Spain and Colombia?

1.4. General methodology

This thesis consists of an independent set of four research articles (Chapters 3 to 6). Each of these chapters has its own structure and includes its own theoretical review. The empirical chapters can be encompassed within the two large theoretical blocks that we have previously developed.

On the one hand, the first block is formed by the first **three empirical chapters** that examine gender inequality from the perspective of the lack of shared responsibility between men and women in the use of measures to reconcile work and family life, and in household and child care tasks:

- Chapter 3. **“Why Spanish working fathers do not request the reconciliation measures available in their companies?”** (Published in *Social Politics: International Studies in Gender, State & Society*, 25(2), 201–228. <https://doi.org/10.1093/sp/jxy010>).
- Chapter 4. **“Constructing fatherhood in the north and south: paid parental leave, work and care in Iceland and Spain”** (in peer evaluation).
- Chapter 5. **“Reconciliation of work and family life in Spain and Ghana: anticipation of young adults’ use of parental leave in the future”** (in peer evaluation).

On the other hand, the second block is formed by the **last empirical chapter** that examines gender inequality from the perspective of gender stereotypes and biases in the recommendation to study engineering.

- Chapter 6. **“Whether your name is Manuel or María matters: gender biases in recommendations to study engineering”** (in peer evaluation).

1.4.1. Country comparison

The objectives that we propose in this research use the Spanish social context as a starting point. In order to make a better evaluation of this environment, we have decided to select other different social contexts: Iceland, Ghana and Colombia. The reference is always Spain; the other countries have been compared with this country, but not with each other. The advantage of these comparative studies is that we can assess how different social contexts influence the responses to our research questions. The choice of these countries lies in their cultural differences with respect to Spain in terms of its values and social policies, such as the reconciliation of work and family life, paternity and maternity leave or co-responsibility in the care of children. All these elements can influence the intentions, motivations and behaviors of people living in these different social contexts. In particular, Iceland is a country of reference for equal parental leave (including paternity leave); Spain is making progress in the equality of such leave (giving more and more days to fathers); Colombia is studying the possibility of increasing paternity leave days (although they are still very far from parity); and Ghana does not grant paternity leave (Table 1.1 shows different social indicators for each country).

Table 1. 1. Social comparisons between Spain, Iceland, Colombia and Ghana

	Spain	Iceland	Colombia	Ghana
<i>Population</i> ^a				
Number of inhabitants (million) in 2018	46.7	0.3	49.6	29.8
Total fertility rate in 2017	1.3	1.7	1.8	3.9
<i>Paid parental leave</i> ^b				
Number of paid weeks reserved for mothers in 2019	16	13	18	12
Number of paid weeks reserved for fathers in 2019	8	13	1.1 (8 days)	0
Number of paid weeks to be used by either parent in 2019	0	13	0	0
<i>Gender inequality</i> ^c				
Rank in the Gender Inequality Index in 2017	15	9	87	131

Source: ^a World Bank, n.d. ^b ILO, n.d.; A. Koslowski, Blum, Dobrotić, Macht, & Moss, 2019; Mintrabajo, 2019 ^c UNDP, 2018

1.4.2. Primary data sources

To carry out our research, we have designed, conducted and built several primary sources:

- i. **Survey** of parents with small children from Madrid (primary source of empirical chapter 3).
- ii. **Survey** of university students from the Complutense University of Madrid (Spain), ESIC Business & Marketing School (Spain), and the University of Cape Coast (Ghana) (primary source of empirical chapter 5).
- iii. **Factorial survey experiment** with a sample of university students from the Complutense University of Madrid (Spain), the Polytechnic University of Madrid (Spain), and the Universidad del Norte (Colombia) (primary source of empirical chapter 6).
- iv. **Assembly of two surveys.** During a research stay at the University of Iceland, we have assembled two databases from two studies with a similar survey administered to parents with small children in Spain and Iceland (primary source of empirical chapter 4).

The different profiles shown above have been selected in order to obtain responses to the research questions. In the case of empirical chapters 3 and 4, working parents with small children have been chosen. On the one hand, information from one group of them has been accessed through schools and, on the other hand, information from another group has been obtained from secondary sources. The difficulty in the first group lies in the necessary collaboration of those in charge of the schools, and the collaboration of the parents who must fill in the extensive questionnaire on the reconciliation of their work and family life (survey of empirical chapter 3). The difficulty in the second group lies in the merger of two studies carried out by two different institutions in different countries. In this case, it has been necessary to verify the possible homogeneity of the individuals and the similarity of the different questions (assembled data of empirical chapter 4).

In the case of empirical chapter 5, a group of potential working parents has been assessed. We have chosen university students from different countries whose main characteristic is their homogeneity and their capacity to assess the situations posed; and we have asked them to fill in a questionnaire on their intentions to reconcile work and family life.

The difficulty of this study lies in the fact that it comes from a broader study that contains three phases. Only the second phase, in which the investigation of the intentions of work and family life is carried out, corresponds to this thesis (survey of chapter 5).

In the latter case of empirical chapter 6, a group of potential tutors has been sought. University students from different countries have been chosen to advise teenagers in the future which career to choose, and who have participated in an experimental factorial survey to detect gender biases in university career recommendations. One of the main difficulties has been getting participants from different backgrounds to create as heterogeneous a group as possible. It should be mentioned that, in this case, the questionnaire presented was shorter than in the other studies (factorial survey of chapter 6).

1.4.3. Quantitative techniques

The following empirical strategies have been carried out in the four empirical chapters:

- i. Data processing: data-cleansing (study of cases and elimination of observations that may compromise the reliability of the analysis), transformation of variables (creation of new variables, imputation of missing values...), and data integration (assembly of databases from different studies).
- ii. One-dimensional and two-dimensional analysis: descriptive statistics, nonparametric tests (with quantitative and qualitative variables for independent and related samples), nonparametric effect size...
- iii. Multivariate analysis: five-way analysis of variance (ANOVA), structural equation modeling (SEM) with one or several samples (path analysis and multigroup path analysis).

In all empirical chapters, a **structural equation model** has been developed with each of the databases presented above. The main motivation for using this technique in our studies is that SEM is a multivariate technique that allows us to analyze:

- Regression models
- Confirmatory factorial analysis
- Complex path analysis models

SEM also allows us to compare the same model between different groups or analyze differences in certain parameters by imposing restrictions. This type of analysis is known as **Multigroup Structural Equation Analysis** (Multigroup SEM).

An important concept when establishing a relationship between two variables is the concept of causality. In terms of probability, according to Luque-Martínez (2012, p. 529) we can speak of probabilistic functional relations where “if X is produced, in condition A, consequently Y will be produced with a probability of p”. If applied to our study, causality would try to explain whether the social phenomenon “A” produces the social phenomenon “B”. SEM allows us to analyze the causality relationship between two variables. For example, based on a hypothesis from the study, we could ask ourselves if “working in a family-friendly company” causes a decrease in “the work-family conflict of the father”. But as can be deduced from this premise, these social phenomena can be influenced by others not included in it; and the possibility of isolating or controlling them is not necessarily a trivial matter.

As we have already mentioned, in all empirical chapters a structural equation model has been developed with each of the databases presented above. The choice of the different models used in the empirical chapters is justified by the different social theories (of social psychology and other fields) that we have reviewed in each of the empirical chapters. These theories have allowed us to establish the relationship between the different variables and determine the type of model we have been able to use for each analysis. Returning to the concept of causality, the only case in which it has been possible to analyze causality has been in Chapter 6, where a random experiment has been conducted to analyze gender biases in the recommendations to study engineering. In the rest of the empirical chapters, it has not been possible to analyze the causality of one variable over another, but to analyze the association between variables. These relationships established between different social phenomena are based on solid theoretical models that support our hypotheses.

Note that the main limitation of our study is the undertaking of **cross-sectional** studies in which it is not possible to analyze causality. In general, at the time of carrying out each of the studies presented in this thesis, we have found several limitations that have been incorporated in each empirical chapter.

On the other hand, from the methodological point of view, the **secondary motivation** for using SEM in our studies is that this technique allows us to analyze:

- **Mediation**

▪ Moderation

Finally, the models used in this thesis were inspired by psychologist Andrew F. Hayes. In his research line, he addresses mediation, moderation and **conditional process analysis** (Hayes, 2017). Hayes (2017) describes some extensions and variants of the simple models of mediation and moderation. Figure 1.3 is presented for illustrative purposes (examples of conceptual diagrams representing mediation and moderation)⁶.

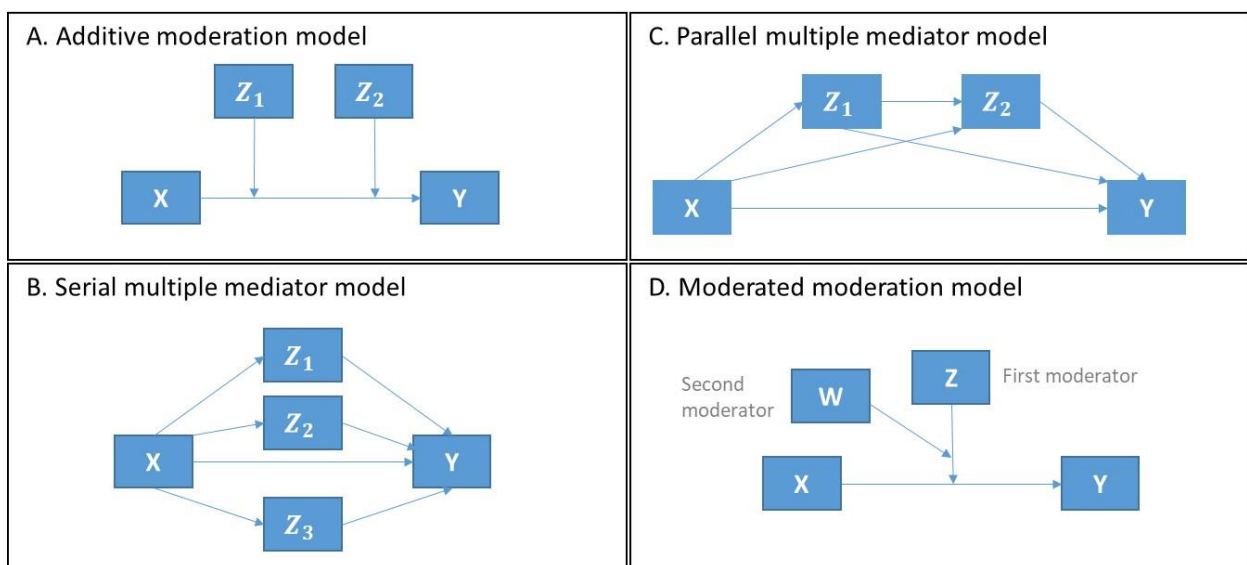


Figure 1. 3. Conceptual diagrams representing mediation and moderation

1.5. General overview of empirical chapters

1.5.1. Review Chapter 3

This chapter (entitled “**Why Spanish Working Fathers Do Not Request The Reconciliation Measures Available In Their Companies?**”) examines the causes of the corporate culture that hinder the involvement of Spanish working fathers in the care of their small children.

⁶ SEM methodology will be further developed in Chapter 2.

Empirical evidence seems to indicate that the percentage of men, and particularly fathers, who feel they have a high work-family conflict is increasing. There are rising expectations and norms for men to become carers but at the same time, in workplaces, there is an important inertia concerning “ideal worker” norms, a tension which results in a growing work-family conflict.

Many fathers would be potential users of the existing reconciliation measures, but they do not request them. Sen’s capability approach provides a theoretical framework for capturing this growing divide between rising expectations and norms for men to become carers and earners and the barriers that they encounter. One of these barriers is the lack of sensitivity on the part of corporate culture towards men who want to balance work and family.

We use a sample of 1,264 wage-earner fathers living in the region of Madrid (Spain) (for further details, section 3.5 of chapter 3 may be consulted). We use path analysis (conducted using structural equation modeling) to analyze how companies which support the use of reconciliation measures by fathers can reduce the gap between theoretical rights to and effective use of reconciliation measures, which leads to a decrease in levels of work-family conflict experienced by working fathers.

Research question and main hypothesis

Research Question (RQ): How can the family-supportive and father-supportive culture of companies expand the capability of Spanish fathers to reach a work-family balance?

Main hypothesis (H-Chapter 3). Working in a family-friendly firm, where there is lower bias against fathers’ reconciliation and high exemplarity (among male staff) in the effective use of reconciliation measures, reduces the feeling of a work-family conflict among male workers.

Results

Who uses reconciliation measures?

Men with young children use work-family reconciliation measures to a lesser extent than women. A notable imbalance between mothers and fathers exists in this area. For example, according to our survey, following birth or adoption, mothers used an average of 162.7 days of leave to care for their baby, whereas fathers used 16.8 days. Furthermore, 37.7% of mothers

requested a reduction in working hours or to work part time when returning to their jobs, whereas only 4% of fathers did the same. The differences in terms of requesting timetable flexibility and changes of shift were also important.

What factors influence men's decisions on reconciliation?

Many wage-earning fathers would like to balance the time and energy that they devote to work and family. In theory, these workers have access to a series of reconciliation measures, which are available at the organizations where they work. However, they face a series of barriers, many common to those experienced by mothers and others that are somewhat different. These barriers inhibit the use of reconciliation measures, creating a gap between the theoretical right to use them and the real capacity to do so.

In practice, many fathers find themselves with a small/thin margin for maneuver in opting to make effective use of these measures, which means they have the feeling that their capacity to make a free choice is limited. This capacity to choose freely is what is known as “agency capacity”, in other words, the capacity to do what one would want to do (Sen, 1989). Three types of factors that favor a working father feeling he has the capacity to use reconciliation measures are: individual, political and social, and those related with the working environment.

What influence does the work environment have?

The work environment, shaped by the corporate culture that exists with respect to male reconciliation, is one of the determining factors of the effective capacity to choose this reconciliation.

Many fathers consider that, at the companies in which they work, the need to reconcile is associated, above all, with the female rather than the male workforce. It is as if the need to reconcile work and family life is “not for them” (Burnett et al., 2013).

Over half of the parents included in our research believed, at their companies, “it is considered more natural for a mother to request a reconciliation measure than a father”.

What is the relationship between work-family reconciliation and work-family conflict?

New social norms related with paternity establish that “being a good dad” means being a father who is involved in the care of his children (Kaufman, 2013). Many wage-earning

fathers are what is known as “new dads”; for example, they are parents who want to actively participate in all phases of their children’s development. This greater participation requires spending more time with young children, which often makes the use of some kind of reconciliation measure necessary. The benefit of this new fatherhood is that it promotes shared parenthood.

However, very few fathers use these reconciliation measures, and this is consistent with the high level of conflict between work and family that (on average) is observed among them. In fact, as revealed by our survey, the level of work-family conflict experienced by fathers is greater than that of mothers.

What corporate factors influence men experiencing less work-family conflict?

As revealed by our analysis, this research considers two main factors that affect men’s perception of a work-family conflict.

First of all, having the perception of working at an organization that supports work-family reconciliation (of both fathers and mothers), for example, and having the feeling that they work at a “family-responsible” company reduces the perception of a work-family conflict among fathers.

Secondly, having the perception of working at an organization where there is no problem of “gender bias in reconciliation” (corporate culture unfavorable to male reconciliation) also contributes to reducing the perception of a work-family conflict for fathers.

Furthermore, another aspect that should be highlighted is that these two factors usually go together: the fathers surveyed considered that companies that supported family-work reconciliation were also those in which there was less gender bias in reconciliation.

What can organizations do?

One way of promoting more convergence between “wanting and doing” is encouraging companies to be more sensitive towards the fact that fathers also have a need for reconciliation. A human resources policy that is sensitive in this way would incorporate actions such as: facilitating and encouraging fathers to use the new, longer paternity leave available, which will gradually become equal to maternity leave; implementing a role-model strategy, also encouraging male management staff to use reconciliation measures; endeavoring to ensure that the reconciliation culture reaches the intermediate management level of the organization; and

questioning the traditional corporate culture which stigmatizes those who use reconciliation measures.

Working at organizations that are more sensitive to reconciliation in general, and to male reconciliation in particular, is a factor that may help increasing numbers of fathers to feel psychologically prepared to challenge gender norms and the barriers that—in work spheres and in circles of family and friends etc.—limit their capacities to choose with regard to work-family balance.

1.5.2. Review Chapter 4

This chapter (entitled “**Constructing fatherhood in the North and South: Paid parental leave, work and care in Iceland and Spain**”) examines how state policies on paternity and maternity leave along with parental working hours can affect shared responsibility for childcare in wage-earning couples with young children in Spain and Iceland. Once again we pay special attention to analyzing the relative participation in childcare activities of working fathers compared to working mothers. Gender construction and bargaining perspectives are the theoretical frameworks that allow us to relate the use of parental leave and fathers’ time allocation, and gender roles.

We use a dataset assembled from two surveys, which consists of a sample of dual-earner couples with young children living in the region of Madrid (Spain) and in Iceland (709 and 593 couples, respectively) (further details in section 4.4 of chapter 4). We use path analysis and multigroup path analysis (conducted using structural equation modeling) to analyze how the use of parental leave and different policy regimes can increase fathers’ involvement in the care of their children, and reduce their working hours, which leads to an increase in levels of participation in care by working fathers.

Research question and main hypothesis

RQ: What is the relationship between the use of parental leave, work hours and fathers’ participation in the care of their children in Iceland and Spain? To what extent can the policy regimes of the countries change this relationship?

Main hypothesis (H-Chapter 4). Fathers' working week mediates the association between their leave length and their involvement in care, in which fathers' use of leave is positively associated with their participation in care.

Results

Do parental leave policies enhance degenderization in parental practices?

Analysis of data on dual-earner couples in Iceland and Spain revealed that mothers' leave length was not associated with fathers' involvement in the care of their children. However, fathers' use of leave increased their involvement in care, both directly and indirectly, through a reduction in working hours. Thus, encouraging fathers to take leave promotes degenderization (Saxonberg, 2013) in paid and unpaid work, by giving fathers the opportunity to bond with their children.

Does parents' commitment to work affect fathers' involvement in childcare?

In Iceland and Spain, fathers worked more hours after the period of paid parental leave than mothers. Along the lines of household bargaining theories, the long hours of work carried out by fathers provide them with power to opt out of household duties (Lundberg & Pollak, 1996; Manser & Brown, 1980; McElroy & Horney, 1981). The more the fathers worked, the less they were engaged in care in both countries.

Only in Spain, however, did the longer working week of mothers increase fathers' involvement in care.

What can policymakers do?

The study also revealed that Icelandic fathers were more engaged in care than fathers in Spain. The greater engagement of Icelandic fathers is probably due to the fact that Iceland has equal quota rights for both parents and the length of the fathers' quota exceeds the Spanish one.

Although the results showed that Spanish fathers tend to be less involved in care than Icelandic fathers, in both countries fathers' use of leave is positively associated with fathers' involvement in care both directly and indirectly through a reduction in working hours. It therefore seems reasonable to conclude that fathers' use of leave after childbirth is a powerful factor influencing the way parents arrange paid work and care as their child grows older.

In summary, if parents are to find a balance between paid and unpaid work, they must be provided with the means to do so, taking into account that generous father-targeted leave policies can have a positive influence on fathers' time with their children.

1.5.3. Review Chapter 5

This chapter (entitled “**Reconciliation of work and family life in Spain and Ghana: Anticipation of young adults’ use of parental leave in the future**”) aims to research the intention shown by potential fathers regarding co-responsibility in the care of children, by presenting findings on the interconnection between youth attitudes or beliefs towards the idea of actively using family-friendly measures (FFM) in the future, their future intention to use FFM and youth anticipated parental use of leave.

In order to achieve this objective, firstly, following TPB (Ajzen, 1985, 1991), these attitudes or beliefs towards the idea of using FFM were separated into three components: attitude, subjective norm and perceived behavioral control. Secondly, a survey was conducted with 928 university students from Spain and Ghana (further details in section 5.4 of chapter 5) from which a multigroup path analysis model was developed to analyze the intention of young adults to use reconciliation measures and, in particular, their future behavior with respect to their use of parental leave.

Finally, the analysis has revealed that there are gender differences in the anticipated use of paternity/maternity leave and in the intention to use FFM in the future. Also, cultural differences were found among young males; the effect of attitude and perceived behavioral control towards the idea of actively using FFM in the future on the intention to use FFM were higher in Spain than Ghana for the subsample of male students. This may be due to the existence of paternity leave in Spain, which in itself is a public policy that helps to advance co-responsibility in the care of children.

Research question and main hypothesis

RQ: Are there gender differences in young adults’ anticipated use of parental leave and other FFM? To what extent can young adults’ attitudes, subjective norms and perceived behavioral controls (towards using FFM) be associated with a greater intention to make use of FFM in the future?

Main hypothesis (H-Chapter 5). In spite of general advances in the creation of neutral gender parental leave and in the incorporation of inclusive family-friendly measures (for fathers and mothers) in companies, female university students still have (on average) a higher willingness to take longer parental leave and a greater intention to use FFM than male university students in the future.

Results

Who will use FFM?

Generally, parents use reconciliation measures to reduce their participation in the labor market to care for their children. In our study, women are more likely to use reconciliation measures in the future than men (on a 1-7 Likert scale, for Spain: 5.45 and 4.92, mean values of women and men, respectively; for Ghana: 5.35 and 4.94, mean values of women and men, respectively). This could mean a lower labor market participation of potential mothers compared to potential fathers.

Moreover, on average, the number of weeks of maternity leave that would be taken by female students (18.03 weeks in Spain and 16.91 weeks in Ghana) is higher than the number of weeks of paternity leave that would be taken by male students (13.49 weeks in Spain and 13.51 weeks in Ghana).

Literature on the anticipation of a work-family conflict provides empirical evidence that young people are able to anticipate their future work-family conflict (Brannen, Lewis, & Nilsen, 2002; Cinamon, 2006); and in that process, women tend to self-limit their professional career in order to provide childcare (Danziger & Eden, 2007; Fernández-Cornejo, Escot, Kabubo-Mariara, et al., 2016; McKeen & Bu, 1998).

How will potential fathers respond to generous paternity leave?

It is interesting to note that if we look at the number of weeks of leave that would be taken by young men, we observe that, on average, this is higher than the number of weeks of paternity leave available to fathers in their respective countries at the time of the study (4 weeks in Spain and 0 weeks in Ghana). This is consistent with the literature on fatherhood, where it is noted that the attitude of fathers towards childcare has undergone a transformation in recent decades leading to new father figures more involved in the care of their children (“superdad”, “new father”) (Abril, Jurado-Guerrero, & Monferrer, 2015; Kaufman, 2013). Furthermore, this

result leads us to believe that it is possible that in the future there will be progress in co-responsibility regarding the care of children, since one of the fundamental pillars of the international reforms of parental leave systems is the introduction of the principles of gender equality, the goal of which is the equalization of parental leave (Arnalds, Eydal, & Gíslason, 2013; Castro-García & Pazos-Moran, 2016; Fernández-Cornejo, Del Pozo-García, Escot, & Castellanos-Serrano, 2018; Moss, Duvander, & Koslowski, 2019).

What factors influence young men's use of FFM?

The analysis revealed that the model proposed based on TPB (Ajzen, 1985, 1991) initially used to explain young people's future intention to use FFM and later to explain their anticipated leave length, can be considered to have greater explanatory capacity in the sample of males compared to females. This is possibly because young males conceive reconciliation as optional, while young females may be pressured by social norms and conceive reconciliation as an obligation (this can be explained by the Social role theory (Eagly, 1987; Eagly & Karau, 2002; Eagly & Wood, 2016)).

Spanish young men's attitudes or beliefs towards using FFM (that is, attitudes, subjective norms and perceived behavioral controls) and self-efficacy in child development influence their intention to use FFM in the future.

Ghanaian young men's subjective norms towards using FFM (that is, people's opinion about them using FFM) and self-efficacy in childcare (that is, in child development and in child play) influence their intention to use FFM in the future.

In both countries, young men's intentions to use FFM in the future explain their anticipated use of paternity leave. Only in Ghana do young men's perceived behavioral controls influence their anticipated use of paternity leave.

What influence does the country have?

The country of residence of our participants had some explanatory capacity. On the one hand, we observe, in general, more intense gender differences among the students in Ghana than among those in Spain. On the other hand, the analysis of a sample of university students from Ghana and Spain revealed that the model proposed based on TPB (Ajzen, 1985, 1991) firstly to explain young people's future intention to use FFM and later to explain their anticipated leave length, can be considered different in Ghana and Spain in the sample of males. The effect of attitude and perceived behavioral control regarding the idea of actively using FFM

or the intention to use FFM was higher in Spain than Ghana for the subsample of male students. Firstly, this may be due to the greater implementation of equality policies in Spain; and secondly, the existence of paternity leave which, in itself, is a public policy that helps to advance co-responsibility in the care of children.

1.5.4. Review Chapter 6

This chapter (entitled “**Whether your name is Manuel or María matters: gender biases in recommendations to study engineering**”) is an experimental design that attempts to show that the disadvantage faced by girls in technological STEM is the result of the interaction of a range of factors embedded in both the socialization and learning processes. The research is focused on the level of recommendation given by Spanish and Colombian university students to four types of students to study Computer Engineering and Mechanical Engineering degrees: a girl with a medium academic profile, a girl with a high academic profile, a boy with a medium academic profile and a boy with a high academic profile. The expectancy-value theory and ecological systems theory are the theoretical frameworks that allow us to explain how social, cultural and gender norms can influence the way girls and boys are brought up, learn and interact with parents, family, friends, teachers and the broader community, and which shape their identity, beliefs, behavior and choices.

We use a sample of 1,714 university students from Spain and Colombia (754 and 960, respectively) (further details in section 6.4 of chapter 6). We conduct a 2x2 factorial design. Factor 1 is the gender of the target (male, female) and factor 2 is the level of the academic record of the target (intermediate, high). Study participants have been randomly assigned to each of these four experimental conditions. We also use a five-way ANOVA analysis and path analysis to analyze the existence of gender bias in the attribution of mathematical ability and gender bias in the recommendation to study engineering, and the interconnection between being a male target, the attributed mathematical ability and the recommendation to study engineering.

Research question and main hypothesis:

RQ: Are there gender biases (or double standards) when potential tutors advise teenagers on their career choice? Are there gender biases (or double standards) in the

recommendation to study engineering based on teenagers' mathematical ability in Spain and Colombia?

Main hypothesis (H-Chapter 6). There is a gender bias in the attribution of mathematical ability and in the recommendation to study engineering. Faced with an identical target (a fictitious 15-year-old student), participants (on average) attribute a greater degree of mathematical ability and recommend studying engineering more to the male rather than to the female target. Furthermore, gender biases (in attributing mathematical ability and recommending engineering) can take the form of differential double standards. These gender biases (or double standards) in favor of the male target are higher when the target's academic record is intermediate compared to when it is high (the participants penalize the male target less than the female one for having an academic record that is not high).

Results

In this study we have offered causal empirical evidence of the existence of a gender bias in the attribution of mathematical ability and in the recommendation to study engineering (see Figure 1.4). Presenting the same information about a 15-year-old target person with a female or male name activated the existing gender stereotypes concerning girls and technological STEMs. This led (on average) to a biased attribution of mathematical ability and to a biased recommendation to study engineering, both in favor of the target with a male name. For instance, from the total sample of participants, when the male target had an intermediate academic record, the estimated marginal mean for Recommend Engineering was 5.16, while the figure corresponding to the female target was very similar (5.12), but only when she had a high academic record. Expressed in terms of double standards: on average, the female target needs a higher academic record before she is recommended to study engineering with the same intensity as the male target. On the other hand, we have also shown that, in fact, the biased attribution of mathematical ability is one of the mechanisms (mediating variable) through which the target's male or female name influences the participants' recommendations to study engineering.

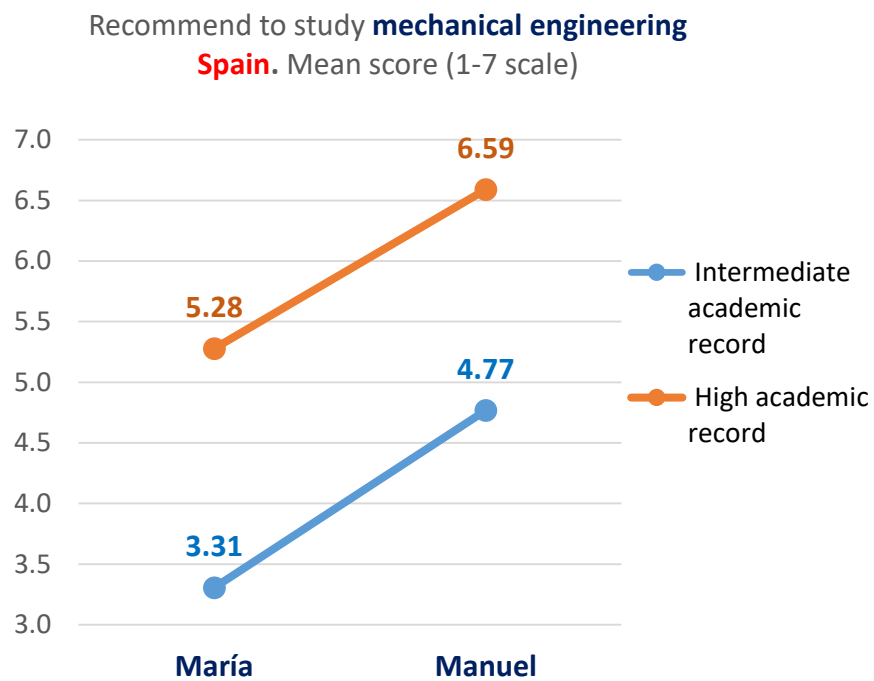


Figure 1. 4. Example of gender bias in the recommendation to study mechanical engineering (Spanish participants)



EMPIRICAL METHODOLOGY

2.1. Introduction

Throughout the different empirical chapters of this thesis we have used the Structural Equation Modeling (SEM) as the main technique of empirical analysis for testing our hypotheses and research questions. In this chapter, we will make a general review of the content and main elements of this statistical technique.

Structural Equation Modeling (SEM) is a multivariate analysis technique. It is widely used in social sciences in subjects like economics, marketing, sociology and psychology.

The antecedent of SEM can be found in the studies of Wright (1934) on path analysis. Wright introduced three concepts:

- 1) covariance-based structural equations
- 2) causal graph or diagram
- 3) decomposition of total effects between two variables into direct and indirect effects.

These basic concepts are the basis of the causal analysis methodology (which we will develop in the following sections).

However, the SEM models, as we understand them today, were introduced in the seventies by authors such as Jöreskog (1973), Keesling (1972) and Wiley (1973) who merged path and factor analysis, although at first these models were known as JKW (the initials of the authors)⁷.

In addition to the causal models developed by Jöreskog, Keesling and Wiley, new models such as the LISREL model (Linear Structural Relationship) and others with different representations of covariance structure analysis were later developed.

The great diffusion of SEM is due to the theoretical and practical contribution of diverse authors (Bentler, 1990; Bollen, 1989, 1996, 2002; Browne, 1974; Chou, Bentler, & Satorra, 1991; Cudeck & Browne, 1983; Jöreskog & Sörbom, 1979; Mueller, 1999; Muthén & Satorra, 1995a, 1995b; Satorra & Bentler, 1994, 2001, 2010; Steiger, 1990). For example, in the theoretical part, it is possible to highlight: the development of a maximum likelihood discrepancy function by Jöreskog (1967); Browne (1982, 1984) demonstrated that the different existing discrepancy functions were, asymptotically, special cases of a generic discrepancy function; the development of estimation methods when the hypothesis of normality is not fulfilled (Satorra & Bentler, 1994); or the multigroup analysis (that allows us to use the SEM methodology in several subpopulations). In the practical part, its great diffusion is due to the development of computer programs: the first software created by Jöreskog and Sörbom (1979), LISREL, EQS, AMOS, Mplus, SEPATH, CALIS, TCALIS.

2.2. Types of causality

Structural equation models establish interdependent relationships between a series of multiple regression equations, where some variables can be considered simultaneously as a dependent variable in one equation and an independent one in another. This question is one of the main differences between SEM and other techniques such as multiple regression, analysis of canonical correlations or MANOVA.

⁷ Shipley (2016) explains that Wright's work was largely ignored mainly for two reasons: "First, it ran counter to the philosophical and methodological underpinnings of the two main contending schools of statistics at the turn of the twentieth century. Second, it was methodologically incomplete in comparison with Fisher's (1925) statistical methods, based on the analysis of variance combined with the randomised experiment, which had appeared at about the same time."

However, before the appearance of Jöreskog, Keesling and Wiley's studies, the use of causal analysis methodology was employed in behavioral sciences by Blalock (1961) and Duncan (1969).

In addition, in relation to the causal diagram found in SEM, an important concept is that relating to causality. Although it is not easy in the social sciences to establish a causality relationship between two variables. As we have already mentioned, we can speak of probabilistic functional relations where “if X is produced, in condition A, consequently Y will be produced with a probability of p” (Luque-Martínez, 2012, p. 529).⁸

In a model of structural equations, there are different types of causal relationships, the most common being (Luque-Martínez, 2012):

- Simple causality: it is represented by an asymmetric relationship between an independent or exogenous variable (cause) and a dependent or endogenous variable (effect) (Figure 2.1).



Figure 2. 1. Simple Causality

- Circular causality: it is represented by a reciprocal relationship between two variables (Figure 2.2). In other words, two variables are dependent and independent of each other.

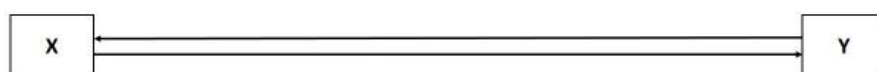


Figure 2. 2. Circular Causality

- Complex causality: it is represented by a network of relationships between some independent variables and other dependent variables (Figure 2.3).

⁸ In order to check a causal relationship, the following conditions must be verified:

- 1) The cause variable (X) precedes the effect variable (Y) in time.
- 2) The variable X is associated with the variable Y.
- 3) There is no other variable that causes the effect exerted by X in Y.

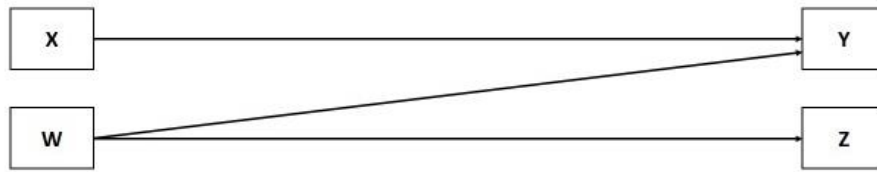


Figure 2. 3. Complex Causality

- Mediation: when a third variable (indirect effect) is introduced between the relationship of an independent variable (X) and a dependent variable (Y). This mediating variable (M) becomes dependent for the variable X and independent for the variable Y (Figure 2.4).

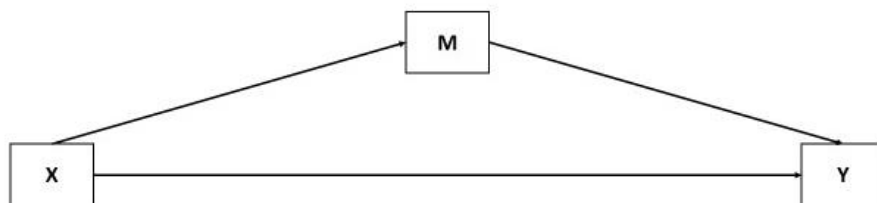


Figure 2. 4. Mediation

The mediation relationship can be partial or full. Partial mediation occurs when introducing the mediating variable into the relationship between X and Y, which is not cancelled (i.e., it remains significant). Full mediation occurs when this relationship is cancelled by introducing the mediating variable in the relationship between X and Y, (i.e. it becomes non-significant) (Figures 2.5 and 2.6).

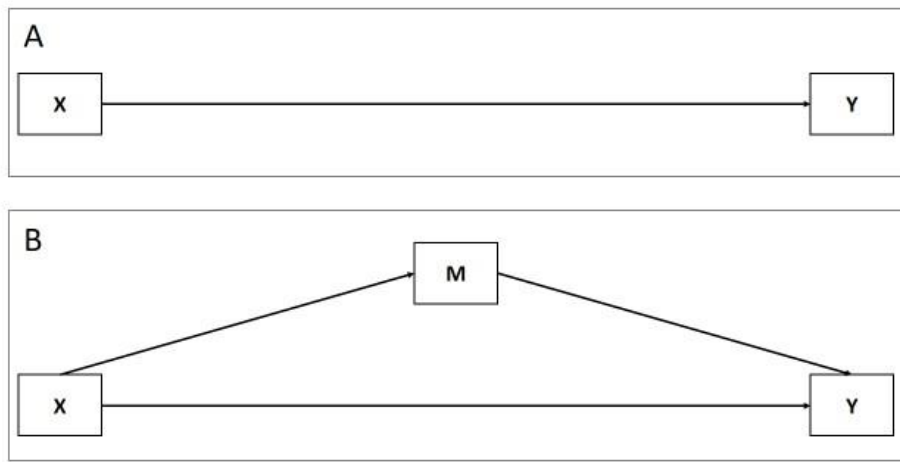


Figure 2. 5. Partial Mediation

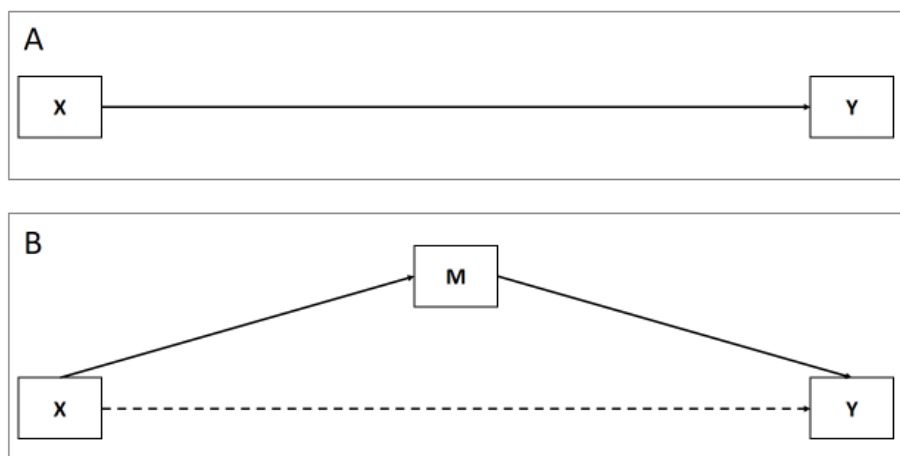


Figure 2. 6. Full Mediation

- Moderation: when the interaction effect of two independent variables (calculated as the product of both variables) is introduced in the dependent variable (Figure 2.7).

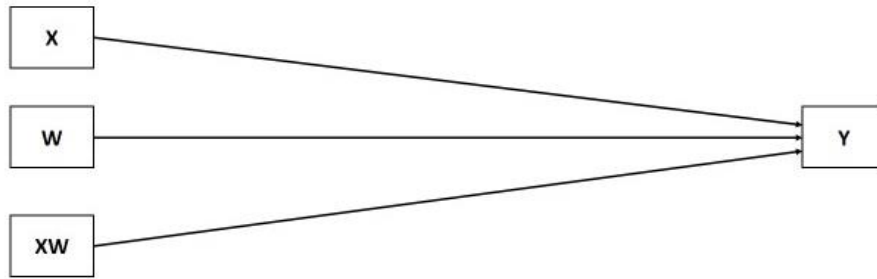


Figure 2. 7. Moderation

- Moderation and mediation: when a mediating variable (indirect effect) and a moderating variable (interaction effect) are introduced (Figure 2.8), and the interaction effect is mediated by at least one variable.

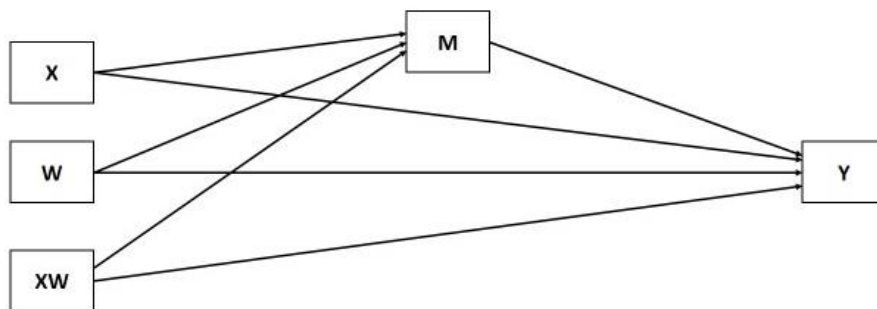


Figure 2. 8. Moderation and mediation

2.3. Types of effects

In structural equation mediation models, total effects between two variables can be divided into direct and indirect (Figure 2.9).

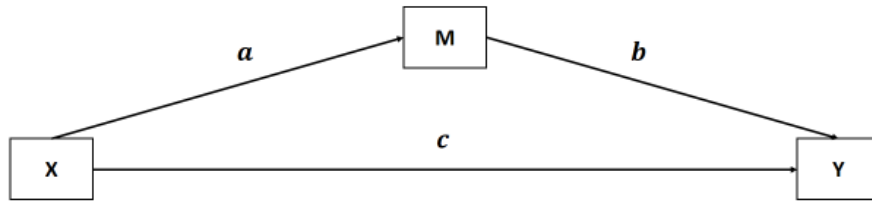


Figure 2. 9. Effects of a simple mediation model

The effects in the model represented in Figure 2.9 are defined as:

- Direct effect of X on Y = c .
- Indirect effect of X on Y through M = $a * b$.
- Total effect of X on Y = $c + a * b$.

Note that the total effect is the sum of direct and indirect effects.

In the case of establishing a mediation and moderation model, the direct and/or indirect effects will be conditioned to the values of the moderating variable (Figure 2.10) (see other examples in Hayes (2017)).

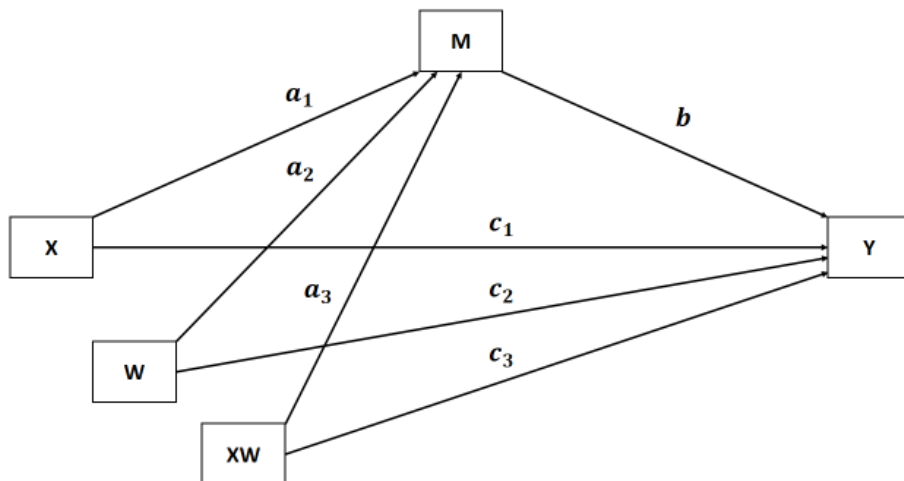


Figure 2. 10. Effects of a conditional process model

The effects in the model represented in Figure 2.10 are defined as:

- Conditional direct effect of X on Y = $c_1 + c_3 * W$.
- Conditional indirect effect of X on Y through M = $(a_1 + a_3 * W) * b$.
- Conditional total effect of X on Y = $c_1 + c_3 * W + (a_1 + a_3 * W) * b$.

2.4. Types of models

There are two modalities of structural equation models:

- a) Recursive models: they are those where there are no reciprocal relations between the variables, that is, the causal effects on dependent (exogenous) variables take a single direction and no correlations are established between the errors. Recursive models can be saturated (when all possible effects are introduced) or unsaturated (when not all possible effects are introduced).
- b) Non-recursive models: those where reciprocal relations are produced between a pair of variables, that is, there are causal effects that go in both directions, or where correlations are introduced between errors.

In practice, non-recursive models are often estimated using instrumental variables, although these variables are not always easy to obtain in the field of behavioral sciences (Bollen, 1996; Finch & French, 2015).

2.5. The structural equation model

2.5.1. Specification and model identification

First, Figure 2.11 shows a representation of structural equations (path analysis). This figure presents the main relationships and the different types of variables that can be used in structural equation models. The description of the elements in Figure 2.11 is explained in Table 2.1.

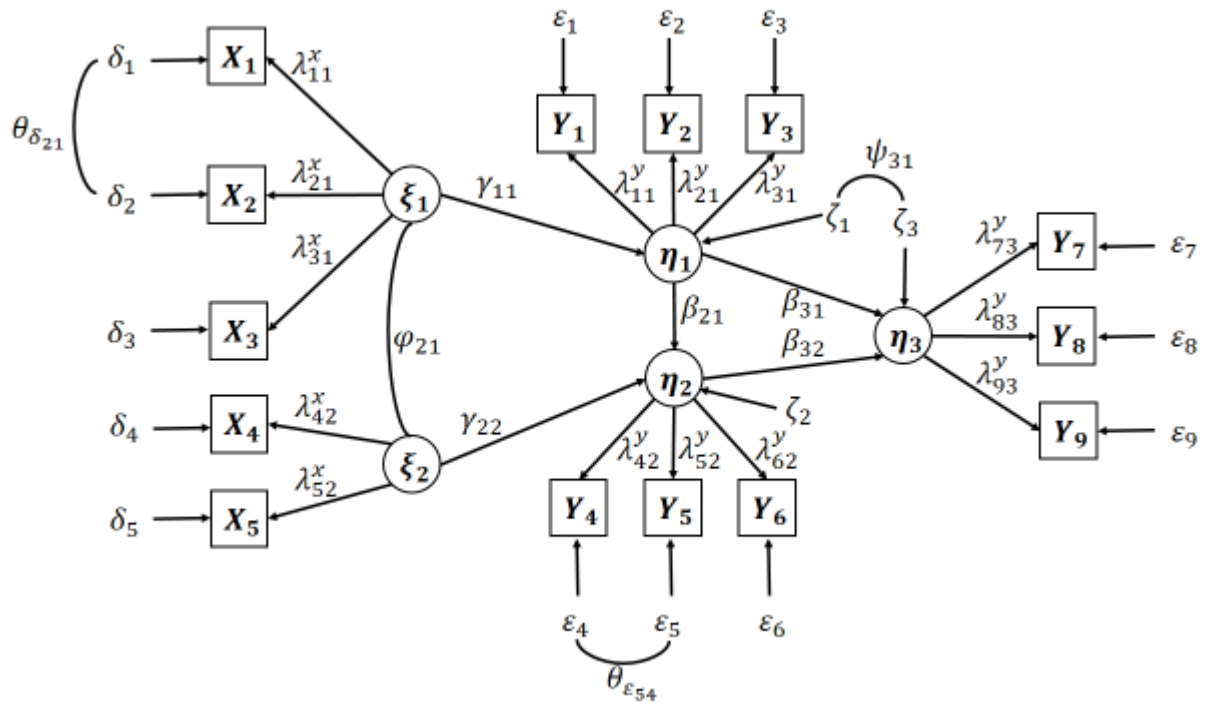


Figure 2. 11. Example of a path diagram

Note that in this type of models, reflective indicators are considered, that is, in this SEM model it is assumed that a group of observed variables are caused by an underlying factor (latent variable), and all causal relationships are considered linear (Hair, Anderson, Tatham, & Black, 1995).

Table 2. 1. Matrices, constructs, indicators and equations of the model

Matrix/Element	Description
Structural model	
$B(\beta_{nm})$	Relationships of endogenous to endogenous constructs
$\Gamma(\gamma_{nm})$	Relationships of exogenous to endogenous constructs
$\Phi(\varphi_{mm})$	Correlation among exogenous constructs
$\Psi(\psi_n)$	Correlation of structural equations or endogenous constructs
Measurement model	
$\Lambda_x(\lambda_{pm}^x)$	Correspondence of exogenous indicators
$\Lambda_y(\lambda_{qn}^y)$	Correspondence of endogenous indicators
$\Theta_\delta(\delta_{pp})$	Matrix of prediction errors for indicators of exogenous constructs
$\Theta_\varepsilon(\varepsilon_{qq})$	Matrix of prediction errors for indicators of endogenous constructs
Constructs and indicators	
ξ	Exogenous construct
η	Endogenous construct
X	Indicator of exogenous construct
Y	Indicator of endogenous construct
Equations	
$\eta = \Gamma\xi + B\eta + \zeta$	Equation for the structural model
$X = \Lambda_x\xi + \delta$	Equation for the measurement model of exogenous constructs
$Y = \Lambda_y\eta + \varepsilon$	Equation for the measurement model of endogenous constructs
Order of each matrix	
m	Number of exogenous constructs
n	Number of endogenous constructs
p	Number of exogenous construct indicators
q	Number of endogenous construct indicators

Source: Hair et al. (1995).

Finally, different rules are used to evaluate model identification. For example:

- 1) A necessary but not sufficient condition is that the degrees of freedom of the model should be equal to or greater than 0.

- 2) Another necessary condition, but not sufficient, is that latent variables, error terms and perturbations must have at least one metric scale assigned to them.

2.5.2. Estimation

The fit function in a model of structural equations is given by the following expression:

$$(1) \quad F = [s - \sigma(\theta)]'W^{-1}[s - \sigma(\theta)]$$

where:

s : Vector of variances and covariances of the observed variables.

$\sigma(\theta)$: Vector of variances and covariances predicted by the model.

W : Weight matrix (depends on the distribution of the observed variables).

The estimation of the parameters of a structural equation model is obtained by minimizing the above adjustment function.

There are several methods to estimate the parameters of the model, the most important being: Maximum likelihood, Generalized least squares, Unweighted least squares, Scale-free least squares, Asymptotically distribution-free (Luque-Martínez, 2012).

2.5.3. Goodness of fit

The assessment of the model's goodness of fit should be made at three levels, evaluating: the overall fit of the model, the fit of the measurement model, and the structural model (Hair, Black, Babin, Anderson, & Tatham, 2006; Luque-Martínez, 2012) (Table 2.2).

Table 2. 2. Model fit

Index	Values
Absolute fit measure	
χ^2 Statistic	Not significant
GFI (Goodness of Fit Index)	> 0.9
NCP (Noncentrality Parameter)	Small values
SNCP (Scaled Noncentrality Parameter)	≈ 0
RNCI (Relative Noncentrality Index)	> 0.9
RMSR (Root Mean Square Residual)	≈ 0
RMSEA (Root Mean Square Error of Approximation)	< 0.08
ECVI (Expected Cross-Validation Index)	Lowest value among models
Incremental fit indices	
AGFI (Adjusted Goodness of Fit Index)	> 0.9
NFI (Normed Fit Index)	> 0.9
NNFI (Nonnormed Fit Index) or	> 0.9
IFI (Incremental Fit Index)	≈ 1
RFI (Relative Fit Index)	≈ 1
CFI (Comparative Fit Index)	≈ 1
RNI (Relative Noncentrality Index)	> 0.9
Parsimony fit indices	
PNFI (Parsimonious Normed Fit Index)	≈ 1
PGFI (Parsimonious Goodness of Fit Index)	≈ 1
AIC (Akaike Information Criterion)	Lowest value among models
CN (Critical N)	> 200
PR (Parsimony Ratio)	
Measurement model fit	
CR (Composite Reliability)	> 0.7
AVE (Average Variance Extracted)	> 0.5
Structural model fit	
Regression weight	Significant (p-value < 0.05)
Squared multiple correlation	> 0.5

Finally, it is necessary to carry out an analysis of the standardized residues (residues below 1.96 are recommended for a 5% significance level). Modification indices are a very useful tool for improving the fit of the model, if necessary (or if you want to modify the model).

2.6. Structural equation models developed in the thesis

There are different strategies for analyzing structural equation models. An example of these are: confirmatory modeling strategy, model development strategy and competitive modeling strategy.

In our case, we have carried out: first, a competitive modeling strategy, and second, a model development strategy.

Finally, the models developed in the thesis are:

- 1) Chapter 3: The statistical model used combines a serial multiple two-mediator model with a moderation of only the direct effect.
- 2) Chapter 4: The statistical model used is a conditional process model that combines two simple mediation models with moderation of a specific indirect effect of a parallel multiple mediator model on a two mediator model (all with the same consequent variable).
- 3) Chapter 5: The statistical model used is a multigroup model of four antecedent variables passing their effects indirectly through a single mediator and a simple mediation through the same mediator. The multigroup model is equivalent to a conditional process model where all paths are moderated by a common moderator (the moderator in this model is the combination of country and sex: Spain-female, Spain-male, Ghana-female, and Ghana-male).
- 4) Chapter 6: Type of model for the sample of university students from Spain: The statistical model used is a conditional process model that combines a simple mediation model with moderation of one path of the indirect effect by one moderator.
- 5) Chapter 6: Type of model for the sample of university students from Colombia: The statistical model used is a conditional process model that combines a simple mediation model with moderation of the two paths of the indirect effect by two moderators.

PART II.
EMPIRICAL CHAPTERS



WHY SPANISH WORKING FATHERS DO NOT REQUEST THE RECONCILIATION MEASURES AVAILABLE IN THEIR COMPANIES?

Abstract^{9,10,11}

Many working fathers would be potential users of the existing reconciliation measures but they don't request them. One barrier they encounter is the lack of sensitivity on the part of corporate culture to men who want to balance work and family life. We use a sample of Spanish wage-earner fathers and path analysis to analyze—following the Sen's capability approach—how companies which support the use of reconciliation measures by fathers can reduce the gap between theoretical rights to and effective use of reconciliation measures, which leads to a decrease in levels of work-family conflict experienced by these working fathers.

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¹⁰ A version of this article has been presented at the congress ASEPELT. Authors: Sabina Belope-Nguema, José Andrés Fernández-Cornejo, Lorenzo Escot-Mangas, and Eva Del Pozo-García.

¹¹ My contribution has consisted in developing the different stages of the process of elaboration of the article: the review of the literature, the formulation of hypotheses, the data collection and processing, and the application of the methodology of structural equation modeling.

From the beginning, the empirical chapter was designed to be an integral part of this thesis. It has been necessary the direction of my supervisors and the collaboration of other authors to obtain the data.

Keywords

Fathering, family-supportive organizations, reconciliation measures, capabilities, work-family conflict

3.1. Introduction

Empirical evidence seems to indicate that there is an increase in the percentage of men, and particularly fathers, who feel they have a high work-family conflict. In fact, some studies find that men now experience more work-family conflict than women.

In the Sixth European Working Conditions Survey 2015 (Eurofound, 2016) the following question was put to the respondents: “How often in the last twelve months have you found that your job prevented you from devoting the time you wanted to your family?” The percentage of men answering “always/most of the time/sometimes” was greater than that for women who answered the same in twenty one of the thirty-three countries analyzed.

According to Aumann et al. (2011), in the United States the percentage of fathers (with children under eighteen) in dual earning couples reporting work-family conflict was 35% in 1977 and 60% in 2008; this compares with the case of mothers, where corresponding numbers were 41% and 47%.

On the other hand, in accordance with the sample of fathers and mothers (with children under six) from the region of Madrid (Spain) used in this article, there were more wage-earner fathers (60.1%) than wage-earner mothers (48.1%) that were strongly or somewhat in agreement with the statement that “the amount of time my job takes up makes it difficult to fulfill family responsibilities”.

Why does this greater conflict between work and family occur among male parents?

Nowadays, “being a good father” is not just identified with the need to be a breadwinner but also with the need to be a fully involved father from the beginning in care and cognitive and affective development of the children. There are rising expectations and norms for men to become carers (Adler & Lenz, 2017; Aumann et al., 2011; Kimmel, 2017, Chapter 6). This coincides with the rise of the figure of “new father” or “superdad” (Abril et al., 2015; Kaufman, 2013).

But the remaining pressure to be an “ideal worker”, fully committed with the company, with long and inflexible working days, etc., and simultaneously to be an involved father can give rise to tension which translates into growing work-family conflict (Gatrell et al., 2015; Rehel & Baxter, 2015).

A question arising in this context is why many fathers with a right (and also an inclination) to make use of reconciliation measures (as a way to reduce this work-family conflict) very rarely request them?

Many fathers who would be potential users of the existing reconciliation measures, do not request them because they feel that these measures “are not for them”. Here there is a convergence of attitudes (still influenced by traditional gender norms) and the ignorance of many fathers themselves, with the lack of a sensitive corporate culture concerning the incorporation of men to the use of reconciliation measures. As Burnett et al. (2013) say, “fathers perceive that while family-friendly policies might in theory be available to parents, they are in practice targeted at working mothers” (see also Gatrell et al., 2015). This implies that many men are not yet able to publicly identify themselves at the workplace as parents (and request the corresponding family-friendly policies).

This lack of sensitivity on the part of corporate culture with regard to males wishing to balance work and family is a barrier that inhibits the fathers’ use of reconciliation measures, and thus creates an agency gap in work-family balance. That is to say, a gap exists between the theoretical right to use these measures and the real ability to do so. The analysis of this agency gap in work-family balance can be dealt with by applying Amartya Sen’s capabilities framework (Drobnič & Guillén Rodríguez, 2011; Hobson, 2011; Hobson & Fahlén, 2009; Sen, 1993).

Sen’s framework of capabilities and agency provides the theoretical space for capturing this growing divide between rising expectations and norms for men to become carers and earners and the economic, social, and normative barriers that they encounter (Hobson, 2011). One of these barriers is a workplace one: the bias against fathers’ reconciliation (lack of sensitivity on the part of corporate culture to men who want to balance work and family).

In this article we are going to use a sample of wage-earning fathers (and their partners) living in the region of Madrid (Spain). Our purpose is to analyze, on the one hand, according to the perceptions of these fathers, to what extent family-friendly companies (or family-supportive organizations) are workplaces with lower bias against father’s reconciliation. And,

on the other hand, to what extent does lack of firms' sensitivity towards reconciliation of male staff (bias against fathers' reconciliation) acts as a barrier to the use of these measures by men, which creates a gap between theoretical rights and real capacity to use them, which leads to increasing levels of work-family conflict.

3.2. Spanish Context

In Spain, there is a complex labor market characterized by structurally high unemployment rates and important levels of job insecurity. These problems were accentuated during the 2008-2013 economic crisis (regarding the consequences of the economic crisis on changes in work-family arrangements in Spain, see Dotti Sani (2018)). During the conduct of the survey (2016) used in this article the macroeconomic situation was one of gradual economic recovery, but without having reached even the 2007 employment levels (OECD, 2017).

Spain is a Mediterranean Latin Country that until the 1970s was a very traditional society with a division of household labor largely traditional, with strong family values, but where, after the end of dictatorship (1975), values and social norms (including gender norms) have been evolving quite quickly towards those existing in the most advanced societies (Fernández-Cornejo, Escot, Kabubo-Mariara, et al., 2016; Moreno Mínguez, Ortega Gaspar, & Gamero-Burón, 2017; Valiente, 2013).

Although there are attempts to apply good reconciliation policies (especially in large companies), in general, the social and media discourse in favor of work-family balance does not seem to have penetrated sufficiently in society. In Spain, the reconciliation of work and family life is very complicated for most parents (Goñi-Legaz & Ollo-López, 2016). Working hours in Spain do not facilitate work-family balance. Lunch is usually taken later than in the rest of the world and the working day is usually extended excessively in the afternoon (maybe because Spain is in a wrong time zone). These problems combined with a chronic lack of childcare facilities (for children under three) often means that working parents have problems for taking care of their children during the week. As the participation of men in domestic and care work is still low, this situation particularly affects working mothers. Often the way of making work compatible with childcare is to turn to intergenerational solidarity (help from grandparents, particularly grandmothers) (Pérez-Caramés, 2014).

According to Moreno Minguez et al. (2017), currently in Spain there is an ambivalent coexistence of two family models—the traditional care model and the dual earner (care responsibility of both man and women) family model. This may be consistent with an emerging change in fathers’ attitudes towards a more involved fatherhood. In a qualitative study with Spanish fathers, Abril et al. (2015) found that approximately one-third of their sample held ideas quite in agreement with new parenting roles; and even the rest of the fathers—who had more adaptive attitudes—held that they wanted to be very involved in the life of their children. In addition, the discourse on gender equality and the public equality policies place more emphasis on the need to advance in the domain of shared responsibility between women and men in domestic and care work.

The Equality Law introduced in 2007 a paternity leave (paid at 100% with a ceiling, and non-transferable) of thirteen days. In addition, when becoming fathers, salaried men are entitled to a two-day leave paid by the company. So male employees had in 2016 (the year in which our survey was conducted) fifteen days of leave after having or adopting a child. This is the only leave used by most eligible fathers (Meil, Romero-Balsas, & Rogero-García, 2017a). The mothers have a maternity leave of sixteen weeks (paid at 100% with a ceiling). The first six weeks are compulsory and the other ten can be transferred to the father. This last option is hardly used (out of a total of 273,032 maternity leaves completed in 2016, only 5,233 were shared with the father). The same applies to the “nursing leave” (two half-hour paid breaks per day until the baby is nine months old or two additional weeks of leave paid by the company) and to the “unpaid leave”, which can be used until the child is three years old. Other statutory reconciliation measures, such as the right to reduce working hours for childcare are also used to a very limited extent by fathers.

In January 2017, paternity leave was extended by two more weeks, so that from this date (outside our sampling period) fathers have four weeks. Currently there is debate about the possibility of equating paternity leave with maternity leave, although this is a rather low profile social demand, compared to other debates and political problems that exist today in Spain.

With regard to the family-friendly measures (FFM) offered by companies, on the one hand, there is a growing awareness of the need to create a family-friendly culture; and, on the other, FFM tend to be more important in large organizations than in small organizations (Pasamar & Alegre, 2015). The most used FFM are those related to flexible working arrangements (especially flexible start and finish times). Other forms of flexibility that can be

found in some companies are compressed work week, remote working, teleworking, and shift changes. Some companies have some form of child care assistance and others have some measures for extending paid family leave.

These aspects corresponding to the Spanish population, in general, acquire particular importance in the case of our sample of fathers living in the region of Madrid. This sample allows us to have data on a population in which there is a growing number of fathers wanting to be involved in caring, in the context of a labor market that is not sensitive to the parents' reconciliation needs (Conde-Ruiz & Marra de Artíñano, 2016), in general, and of the fathers, in particular. That is, we work with a sample where the context might be characterized by a marked gap between expectations and capacity of choice. This is a very interesting situation from the point of view of research, and may be representative of a series of emerging and advanced countries where there is an important gap between some attitudes which are changing rapidly and institutions and business culture that change more slowly. For instance, 63.6% of our sample of wage earning fathers agreed with the statement "there will come a time in the future in which men will use as much as women the measures of reconciliation of family and working life offered by companies". But, in contrast, only 4% of them asked for a reduction in working hours, after the birth of their last child, while 37.7% of mothers asked for it.

3.3. Theoretical Justification and Review of the Literature

3.3.1. Work-family balance

There is an extensive literature on work-life balance, originating in late 1960s (Pasamar & Alegre, 2015). However, defining "balance" is not easy. Allen and Greenhaus (2011) distinguish three notions of work-family balance which are normally used in literature on this subject: balance as the absence of work-family conflict; balance as high involvement across multiple roles; and balance as high effectiveness and satisfaction across multiple roles. On this basis, these authors define work-family balance as "an overall appraisal of the extent to which individuals' effectiveness and satisfaction in work and family roles are consistent with their life values at a given point in time".

This definition is consistent with the work-family border theory (Clark, 2000) and with the boundary theory (Ashforth, Kreiner, & Fugate, 2000). Both theories address how people construct, maintain, negotiate and cross boundaries or borders between work and family.

Two sides can be distinguished in the work-life interface: Work-family conflict and work-family enrichment. Greenhaus and Beutell (1985) define work-family conflict as a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect. Depending on the origin of the interference, we can distinguish between work-to-family conflict (WFC) and family-to-work conflict (FWC). On the other hand, Greenhaus and Powell (2006) define work-family enrichment as the extent to which experiences in one role improve the quality of life in the other role. The causality can be work-to-family benefit (WFB) and family-to-work benefit (FWB).

In this article emphasis is placed on work-family conflict understood as work-to-family conflict (WFC). Although several sources of WFC have been identified, most researchers agree that WFC exists when (Greenhaus & Beutell, 1985): (a) time devoted to the requirements of one role makes it difficult to fulfill requirements of another; (b) strain from participation in one role makes it difficult to fulfill requirements of another; and (c) specific behaviors required by one role make it difficult to fulfill the requirements of another.

We use the Work-Family Conflict Scale developed by Netemeyer, Boles, and McMurrian (1996), that incorporates items from these three sources.

3.3.2. Fatherhood and identity

A classical conceptualization of paternal involvement in the literature has been the one offered by Lamb et al. (1985, 1987). They proposed that paternal involvement consisted of three dimensions: interaction (father's direct contact with his child through caring and shared activities); availability (potential availability for interaction, accessibility to the child); and responsibility (e.g. making decisions for the child). Implicit in these dimensions is the notion of positive paternal involvement, which is likely to promote healthy development in the child (Habib, 2012).

The effective involvement of the father is influenced by a series of demographic and work characteristics that have to do with economic constraints and the division of labor and childcare between the members of the couple (Lapuerta, 2013; Meil, 2013; Meil, Romero-

Balsas, & Rogero-García, 2017b). But the fathers' social psychological characteristics, such as their father identity, are also very important (Goldberg, 2015).

One way to deal with the analysis of the father's identity is the one derived from Stryker's identity theory (1968), a theory based on symbolic interactionism. This approach has been used by various authors (Goldberg, 2015; Habib, 2012; Olmstead, Futris, & Pasley, 2009) to explain the father's involvement, or his wish to be involved.

The identity theory states that individuals' identities and roles are organized hierarchically, and that the position of a particular identity (or role) in this hierarchy predicts how often individuals will act in accordance with that identity (Goldberg, 2015). The position in this hierarchy of an identity may be influenced by its salience (the likelihood that an identity is invoked in a particular situation) and its psychological centrality (the psychological importance of identities according to individuals themselves). In this sense, and at least in most advanced countries, the status of an involved father may nowadays be more prominent (more salient and psychologically central) than before.

This greater prominence of the involved father may be related with the emergence of the figure of the "new father" or "superdad" (Bonney, Kelley, & Levant, 1999; Devreux, 2007; Fursman & Callister, 2009; O'Brien & Moss, 2010; Romero-Balsas, Muntanyola-Saura, & Rogero-García, 2013), who is a direct and involved carer of his children.

In the case of the United States, Kaufman (2013) conducted seventy semistructured interviews with fathers. She differentiated three types of fathers: "old dads" (traditional fathers), "new dads" (fathers who seek a better work-family balance), and "superdads" (fathers who significantly adjust their work in order to have more time with their families). One of her conclusions was that "there has been a particularly strong shift in men's attitudes that has brought convergence (with mothers) in beliefs about work and family roles".

For the case of Spain, Romero-Balsas et al. (2013) analyzed (on the basis of an analysis with thirty in-depth interviews) how Spanish fathers constructed and justified their decisions to use parental leaves. They identified a minority group of "new fathers" with a clear pro-care discourse and a discursive awareness of the need to balance personal, family, and work time. Furthermore, Abril et al. (2015) in their qualitative study with sixty-eight couples identified three types of fathers: "occasional caregivers", "assisting caregivers" (the father helps the mother, who has the main responsibility of caring) and "committed fathers" (fathers fully

committed with an involved paternity). According to Abril et al. (2015), “this form of committed paternity is increasingly present in young Spanish fathers”.

Summarizing, the literature seems to indicate that there is a growing number of fathers that feel they should be actively involved in looking after their small children, and so being potential users of reconciliation measures.

3.3.3. Corporate barriers to fathers’ reconciliation

With respect to these barriers in the workplace that affect male workers in particular, in this work we use the expression “bias against fathers’ reconciliation”. We define it as the viewpoint held by managers of organizations and fellow-workers that the need for reconciling, and the work-family conflict, are questions specifically relating to women staff and not so much with men staff. Or, from the fathers’ point of view, the perception held by these fathers that the reconciliation measures “are not for them” (they do not feel entitled). This idea appears in the works of Abril and Romero (2008), Burnett et al. (2013), Bustelo and Peterson (2005), Gatrell et al. (2015), Haas and Hwang (2007), Holter (2007) and Levine and Pittinsky (1997).

Levine and Pittinsky (1997) referred to the simultaneous action of three factors which are self-reinforcing among each other: males do not request reconciliation practices because they feel that these measures are not available for them; employers do not openly offer these to males because they do not seem to ask for them; and since they do not, women ask for these reconciliation practices in a context of social pressure leading them to do so, as well as the fact that they are available in their organizations. Moreover, this coincidence of factors does not just occur between management and male workers, men also feel themselves pressured by their own co-workers, who sometimes do not understand that they want to balance family and work.

Burnett et al. (2013) use qualitative interview data drawn from 100 employed fathers from two large UK organizations. These authors try to show that while male workers may feel valued as employees, they often feel invisible at work in their paternal role: “While work-family policies typically proclaim themselves to be gender neutral, many are still (perhaps inadvertently) developed and written to be utilized in conjunction with motherhood, rather than fatherhood”.

Kaufman (2013), in her interviews found that some fathers had the perception that their companies were “resistant workplaces”: “Some men feel discouraged by employers and co-

workers from taking leave. Employers may resist the notion that fathers want to be actively engaged in family life”.

In this article we are going to construct two instruments in order to introduce some elements of these workplace barriers in our analysis: “Reconciliation bias” (perception by the respondent that in his company there is a bias against fathers’ reconciliation); and “exemplarity” (extent to which in the respondent’s company the managers use reconciliation measures).

3.3.4. Work-family conflict among the fathers

As mentioned at the beginning, nowadays it seems that there is a growing number of fathers who feel they experience a high level of work-family conflict. And this is so because today “being a good father” not only is identified with the need of being a breadwinner but also with the need to be a completely involved father, from the start, in caring and cognitive and affective development of their children. O’Brien and Moss (2010), referring to the case of Europe, state that “today fathers are expected to be accessible and nurturing as well as economically supportive to their children”. And Kaufman (2013), referring to the case of United States, affirms that “fathers are expected to work long hours but are also expected to be highly involved with their children”.

Despite a dramatic shift in attitudes, workplaces are still largely organized for the so-called ideal worker—an individual who is unencumbered by family responsibilities (Rehel & Baxter, 2015). This strong inertia of the culture of the ideal worker acts in unison with some workplaces in which, in practice, reconciliation measures are used very much in the minority by male workers (and very much in the majority by female workers). As a result many fathers who would be potential users of existing reconciliation measures forbear to do so, thus creating a growing subjective sensation of work-family conflict.

An interesting aspect for analysis is the role played in this context by family-friendly workplaces. In particular, we are interested in finding out if firms with a family-supportive work environment are companies with a lower degree of bias against fathers’ reconciliation and lower levels of work-family conflict among fathers (Escot, Fernández-Cornejo, Lafuente, & Poza, 2012). We used the family-supportive organizational perceptions scale (FSOP) (Allen, 2001). This scale has previously been used in other research works, such as that of Grandey, Cordeiro, and Michael (2007).

3.3.5. Gap between theoretical rights and choice: Sen's capability approach

Sen's capability approach (Sen, 1989, 1999) is a normative theory (in the field of the theories of the economic and social justice) based on the assessment of individuals' capabilities (their opportunities to achieve valuable "functionings" or "states of being") (Sugden, 1993). It asks us to consider not only what individuals do but also what their opportunities to be and do are. For Sen, the core issue is not only what individuals choose, but the choices that they would make if they had the capabilities of achieving the kind of lives that they have reason to value (Robeyns, 2003).

Sen starts from the idea that living may be seen as consisting of a set of interrelated "functionings", consisting of "beings" and "doings" (being adequately nourished, avoiding premature mortality, being able to read and write, being happy...). Functionings are to be distinguished from commodities: a commodity is an object which a person might use, while a functioning is an aspect of living itself (Sugden, 1993).

Capability refers to the set of valuable functionings that a person has effective access to. Thus, a person's capability represents the effective freedom (or agency) of an individual to choose between different functioning combinations. If this capability set is expanded, the well-being of the individual can be increased.

Sen's capability approach can be a useful theoretical framework for analyzing agency inequalities in work-family balance (Drobnič & Guillén Rodríguez, 2011; Hobson, 2011; Hobson & Fahlén, 2009).

There exists a gap between fathers' theoretical rights to use reconciliation measures and the effective ability to use them (this giving rise to growing levels of work-family conflict).

Hobson (2011) distinguishes three types of factors which determine the individual's capability set (based on a reformulation of the "conversion factors" proposed by Sen): individual factors (gender, ethnicity, age, human capital, etc.); institutional factors (laws, policies, organizational culture, etc.); and social/cultural factors (society, community, media, public debate, etc.).

In this article we consider that "being effectively able to balance work and family" is a "functioning" that can be achieved (at least in part) through the use of the reconciliation measures offered by companies. And we consider that an important factor to access this functioning (to give the individual the capability of achieving that functioning) is the fact of

working in an environment where there is a low (or null) level of bias against fathers' reconciliation. That is to say, if the workplace (the corporate culture) is sensitive to the need of using the reconciliation measures by the fathers, that means that the capabilities of the fathers (their agency to choose) will be expanded. And if the fathers have the feeling/perception that they can effectively use these reconciliation measures the rate of use of them will increase and the subjective perception of work-family conflict will decrease.

We are going to focus our analysis in the family-supportive and father-supportive culture of companies, but we are also considering other factors (as control variables) that also can expand the capability of fathers to reach a work-family balance (expressed as a reduction in work-family conflict).

3.4. Model and Hypotheses

3.4.1. Hypothesized model

The purpose of the model is to show that, according to the perceptions of the fathers, the family-supportive organizations are workplaces that reduce work-family conflict, directly and indirectly, through a reduction in the bias against the father's reconciliation.

In Figure 3.1 we present our Hypothesized model. The dependent variable is WFC (father's perception of work-family conflict). This WFC is explained by "FSOP" (Family-supportive organizational perceptions scale), "Reconciliation bias" (bias against fathers' reconciliation) and "Exemplarity" (extent to which in the respondent's company men and male managers use reconciliation measures). The variable "Exemplarity" has a direct negative effect on WFC. The variable "Reconciliation bias" has a positive direct effect on WFC and a positive indirect effect on WFC through the mediator variable "Exemplarity" (in our model we assume that firms with high levels of bias against fathers' reconciliation are companies in which men and male managers make low use of reconciliation measures). And the variable FSOP has a negative direct effect on WFC and a negative indirect effect on WFC through the mediating variables "Reconciliation bias" and "Exemplarity". We also consider that the direct effect of FSOP on WFC can be moderated by the number of children (the higher the number of children the higher the direct effect of working in a family-supportive company on reducing work-family conflict).

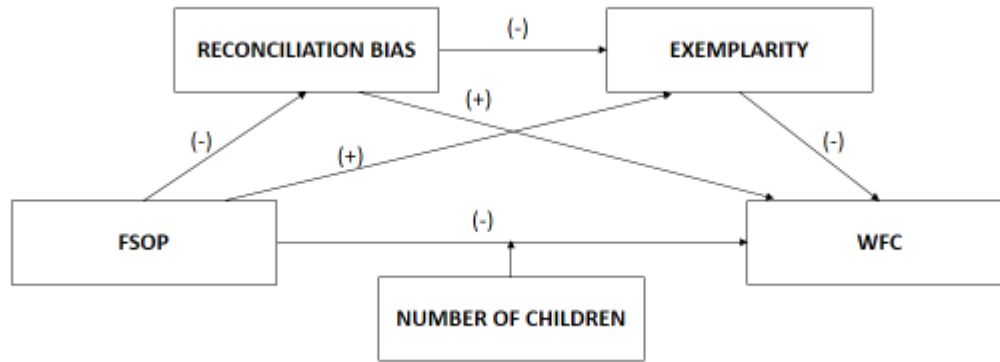


Figure 3. 1. Hypothesized model of the determinants of WFC.

Note: control variables are: “Public sector”, “Working week”, “Daily hours caring”, “Earnings”, “Size of the organization”, and “Mother’s satisfaction with family”.

3.4.2. Contrasting hypotheses

Hypothesis 1. Working in a firm where there is lower bias against fathers’ reconciliation and a greater effective use of reconciliation measures by other men and male managers reduces the feeling of work-family conflict among male workers. Indeed, a lower value in the “Reconciliation bias” variable and a higher value in the “Exemplarity” variable constitutes an indicator that the firm’s corporate culture provides a “factor” or “resource” for the firm’s male workforce which expands their ability to choose in the field of reconciliation. In other words, that support of the company to the reconciliation of men reduces the gap between theoretical rights to and effective use of reconciliation measures. This smaller gap should lead to a use of reconciliation methods nearer to the optimum level, thus reducing the feeling of work-family conflict. In the context of our model fathers who have the idea that the place where they work has a low level of “Reconciliation bias” and a high level of “Exemplarity” will tend to have a lower feeling of work-family conflict.

Hypothesis 2. Male workers working in firms where reconciliation bias is low have the perception that in their firms there is a greater effective use (and exemplarity in the use) of reconciliation measures by men and male managers. Indeed, the “Exemplarity” variable

mediates the effect of “Reconciliation bias” on WFC. That is, a lower value of “Reconciliation bias” also tends to indirectly reduce the WFC value through its effect on “Exemplarity”.

Hypothesis 3. The family-supportive organizations are also firms in which corporate barriers to male reconciliation are lower. Specifically, fathers working in FSOP firms have the perception that in their firms there is less bias against father’s reconciliation and greater effective use of reconciliation measures by men and male managers.

Hypothesis 4. Being a family-supportive organization reduces fathers’ work-family conflict directly, but also indirectly, through its effect on bias against father’s reconciliation (“Reconciliation bias”) and the firm’s exemplarity (“Exemplarity”).

Hypothesis 5. The direct effect of the FSOP on the WFC is moderated by the number of children. The greater the number of children the greater the need to reconcile, so the greater will be the degree to which working in a family-supportive organization will reduce the father’s feeling of work-family conflict.

3.5. Method

3.5.1. Database

Data were collected (from February to May 2016) from 1,785 households with children between three and six years old, residing in Madrid and its metropolitan area. Sampling was obtained through fifty-four randomly selected schools belonging to ten homogeneous geographic zones (in terms of the child population). In each of these schools, the teachers distributed the questionnaires among their students (from “3rd year”, “4th year” or “5th year” of pre-school education) for them to give to their parents. Once the questionnaires were completed, the children returned them to the teacher in a sealed, anonymous envelope. The rate of response (parents who completed the questionnaire/ questionnaires delivered to school management) was 40.5% (this rate would be over 50% if we take into account that approximately 20% of questionnaires delivered to school management were not distributed).

The questionnaire had a closed structure and was divided into three parts: the first one had ten common questions for both parents (household characteristics); the second part had forty questions to be filled out by the father (1,661 fathers completed the fathers’ part); and the third part had forty-one questions for the mother (1,775 mothers completed their part). Most of

these questions addressed to the father and to the mother were the same. The objective was to gather information (from the mother and the father) about how they divided the childcare tasks and about their working lives.

Given the purpose of this article (to analyze the case of fathers working in organizations) we were interested in fathers that were wage-earners at the moment of doing the survey. Thus from the initial sample we selected a sub-sample of 1,264 wage earners fathers (those with no employment and self-employed were excluded). The average age of the fathers of our sub-sample were 39.8 years; their average number of children was 1.95; 96.5% of the fathers lived in the same home with the mother (we did not receive any questionnaire from same sex couples); 77.4% of the mothers had a job; 14.4% of the fathers were economic immigrants; and 52.8% of the fathers worked in large organizations (we include here most of the fathers who worked in the public sector and those who worked in private companies with more than 250 workers).

3.5.2. Dependent Variable

In the quantitative analysis that will be developed later the dependent variable will be “WFC” (father’s perception of work-family conflict). We used the Work-family conflict scale of Netemeyer et al. (1996), which is a measure consisting of five items.

The respondent was being asked “to what extent do you agree or disagree with each of these statements?” These statements were responded to along five-point strongly disagree-strongly agree response scales. The five statements were: “The demands of my work interfere with my home and family life”; “The amount of time my job takes up makes it difficult to fulfill family responsibilities”; “Things I want to do at home do not get done because of the demands my job puts on me”; “My job produces strain that makes it difficult to fulfill family duties”; and “Due to work-related duties, I have to make changes to my plans for family activities”.

The measure is the average score of these five items (Cronbach’s $\alpha = 0.904$ for our sample of wage earner fathers). The range of values is from one to five (see Table 3.1). The higher the score the higher the perception of work-family conflict.

3.5.3. Explanatory variables

There are three main explanatory variables (“FSOP”, “Reconciliation bias” and “Exemplarity”) and several control variables.

FSOP (Family-supportive organizational perceptions scale) is a measure consisting of fourteen items developed by Allen (2001). The respondents were asked the following question: “To what extent do you agree that each of the following statements represent the philosophy or beliefs of your organization (remember, these are not your own personal beliefs, but pertain to what you believe is the philosophy of your organization)”. The response options were on a five-point strongly disagree-strongly agree scale. Some examples of these fourteen statements were: “It is assumed that the most productive employees are those who put their work before their family life” (reverse scoring); and “Employees are given ample opportunity to perform both their job and their personal responsibilities well”. The list with the fourteen statements is in the appendix. The measure is the average score of the fourteen items ($\alpha = 0.823$). The range of values is from one to 4.93 (see Table 3.1). The higher the score the higher the perception of a family-supportive work environment.

“Reconciliation bias” is a measure that was developed from five questions addressed to the respondents that sought to determine whether he had the perception that in his company there is a bias against fathers’ reconciliation. Specifically, the respondents were again asked “To what extent do you agree that each of the following statements represent the philosophy or beliefs of your organization (remember, these are not your own personal beliefs, but pertain to what you believe is the philosophy of your organization)”. The response options were in a five-point strongly disagree-strongly agree scale. These five statements were: “In my company, the need to reconcile work and family life is conceived as something that concerns mainly the female staff of the company, and not so much the masculine one”; “In my company, it is considered more ‘natural’ for a mother to apply for a paid leave, unpaid leave or a reduction of working hours to care for small children, than for the father to apply for it”; “A father who uses the reconciliation measures available in the company (working hours reduction, etc.) is seen as an uncompetitive and unambitious worker”; “A father who uses the reconciliation measures available in the company (working hours reduction, etc.) is seen as a rather weak and insecure worker”; and “A father who uses the reconciliation measures available in the company (working hours reduction, etc.) is often seen as someone who “sneaks off” from work for some other purpose”. The measure is the average score of the five items ($\alpha = 0.910$). The range of values

is from one to five (see Table 3.1). The higher the score the higher the respondent's perception that the company does not support fathers' reconciliation.

"Exemplarity" is a measure that was developed from four questions addressed to the respondents that was intended to determine whether he had the perception that in his company men and male managers routinely use reconciliation measures (are exemplar in this field). The respondents were asked "What is your degree of agreement with these statements about the support of your company/organization to the reconciliation?". The response options were in a five-point strongly disagree-strongly agree scale. These four statements were: "In my company, almost all fathers use paternity leave"; "Most male managers take the full paternity leave when having a child"; "In my company, the percentage of fathers using the reconciliation measures is above the average of other companies"; and "In my company, middle managers are sensitive to the needs of reconciling of male staff". The measure is the average score of the four items ($\alpha = 0.783$). The values range from one to five (see Table 3.1). The higher the score the higher the respondent's perception that in the company men and male managers commonly use reconciliation measures.

There is a moderating variable, "Number of children", that we consider that moderates the direct effect of FSOP on WFC.

As control variables these six variables were also considered: "Public sector" (father works in the public sector), which is a dichotomous variable (1 = public sector; 0 = private sector); "Working week" (number of hours the respondent ordinarily works per week); "Earnings" (monthly net income. There are eight categories: from (1) "Fewer than 600 Euros" to (8) "More than 4,000 Euros"); "Size of the organization" (size of the organization where the father works. There are five categories: from (1) "Fewer than ten workers" to (5) "More than 500 workers"); "Daily hours caring" (time that the father usually dedicates to the care of his children, in a working day); and "Mother's satisfaction with family" (mother's degree of satisfaction with her family and personal life; on a scale of zero to ten, where "0 = zero satisfaction" and "10 = very high satisfaction"). These six variables have a statistically significant effect on at least one of the three endogenous variables of the model ("WFC", "Reconciliation bias", and "Exemplarity"). Other possible control variables, such as the fact that the father is an economic immigrant, or the mother's employment status, have not been included as control variables because they did not have a significant effect on any of the three endogenous variables.

3.6. Results

3.6.1. Descriptive statistics

The basic descriptive statistics of the eleven variables to be used in our path analysis are shown in Table 3.1, as well as the corresponding correlations between these variables. Correlations are quite consistent with the relations raised in our hypothesized model. For instance, the model states that there are three explanatory variables (“Exemplarity”, “Reconciliation bias” and FSOP) that are associated with the dependent variable, father’s perception of work-family conflict (WFC); and indeed statistically significant correlations are obtained (with the expected signs) between those three variables and the latter (respectively, $r = -0.306, p = .000$; $r = 0.374, p = 0.000$; and $r = -0.386, p = .000$).

On the other hand, most of the control variables used in our analysis also present statistically significant correlations with WFC.

Table 3. 1. Descriptive statistics and correlations

	N	Min.	Max.	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. WFC	1237	1.00	5.00	3.25	1.10	1.000										
2. FSOP	1164	1.00	4.93	3.03	0.77	-0.386**	1.000									
3. Reconciliation bias	1207	1.00	5.00	3.10	1.06	0.374**	-0.657**	1.000								
4. Exemplarity	1165	1.00	5.00	3.07	0.98	-0.306**	0.338**	-0.359**	1.000							
5. Number of children	1264	1.00	10.00	1.94	0.88	0.012	0.025	0.016	-0.041	1.000						
6. Public sector ^a	1264	0.00	1.00	0.23	—	-0.207**	0.134**	-0.166**	0.171**	-0.017	1.000					
7. Working week	1235	6.00	96.00	40.39	9.29	0.330**	-0.152**	0.165**	-0.162**	-0.003	-0.281**	1.000				
8. Earnings	1249	1.00	8.00	4.05	1.57	0.037	0.160**	-0.044	0.135**	0.135**	0.026	0.131**	1.000			
9. Size of the organization	1255	1.00	5.00	3.55	1.51	-0.086**	0.034	-0.039	0.201**	0.057*	0.223**	-0.101**	0.427**	1.000		
10. Daily hours caring	1187	0.00	16.00	2.76	2.23	-0.271**	0.090**	-0.124**	0.120**	-0.021	0.139**	-0.224**	-0.196**	0.035	1.000	
11. Mother's satisfaction with family	1127	0.00	10.00	8.39	1.80	-0.134**	0.083**	-0.033	0.087**	0.001	0.034	-0.014	-0.003	-0.007	0.052	1.000

Spearman's correlation: (**) Statistically significant at 0.01 (bilateral); (*) Statistically significant at 0.05 (bilateral).

Note. Rank point biserial correlations are reported for associations between binary and continuous variables. ^a1 = Public sector (76.90%), 0 = Private sector (23.10%).

3.6.2. Path analysis

Path analysis was conducted using structural equation modeling (SEM), through the CALIS Procedure in SAS v9.4 software package (SAS Institute Inc, 2015). The estimation method used was robust maximum likelihood (MLR), which performs robust estimation of model parameters to non-normal data (Finney & DiStefano, 2006). The statistical model performed combines a serial multiple two-mediator model with a moderation of only the direct effect, which can be referred to as “conditional process analysis” (Hayes, 2013). We estimated the model showed previously in the conceptual diagram (Figure 3.1). The output of our path analysis is in tables 3.2 and 3.3.

First, we examined the fit to the data of our hypothesized model of the determinants of father’s perception of work-family conflict (Figure 3.1). In an initial version of the model we considered that the five control variables affected the three endogenous variables of the model. But after removing some of these effects (those in which there were not a statistically significant results) we arrived to the definitive model showed in Table 3.2. The fit of the model was quite acceptable. The chi-square of our model was not significant ($\chi^2(27) = 26.793, p = 0.475$), and its fit indices were quite acceptable (TLI = 1.000; CFI = 1.000; RMSEA = 0.000 and 90% CI [0.000, 0.026]; SRMR = 0.020).

Table 3. 2. Final SEM model for the determinants of father work-family conflict

Outcome		B	SE	B	t	p	LL 95% CI	UL 95% CI	R ²
Reconciliation bias									0.491
	Constant	5.801	0.114	—	51.051	<.0001	5.579	6.024	
	FSOP	-0.925	0.032	-0.691***	-28.701	<.0001	-0.988	-0.862	
Covariates	Public sector	-0.208	0.060	-0.083***	-3.467	0.001	-0.325	-0.090	
	Earnings	0.042	0.016	0.064**	2.668	0.008	0.011	0.073	
Exemplarity									0.202
	Constant	2.685	0.260	—	10.342	<.0001	2.177	3.194	
	Reconciliation bias	-0.231	0.037	-0.253***	-6.152	<.0001	-0.304	-0.157	
	FSOP	0.228	0.050	0.187***	4.535	<.0001	0.129	0.326	
Covariates	Size of the organization	0.126	0.019	0.193***	6.496	<.0001	0.088	0.164	
WFC									0.304
	Constant	3.456	0.435	—	7.952	<.0001	2.604	4.308	
	Exemplarity	-0.164	0.035	-0.145***	-4.757	<.0001	-0.232	-0.097	
	Reconciliation bias	0.143	0.041	0.138***	3.487	0.001	0.062	0.223	
	FSOP	-0.097	0.094	-0.070	-1.026	0.305	-0.281	0.088	
	Number of children	0.266	0.130	0.210*	2.042	0.041	0.011	0.521	
	FSOP × Number of children	-0.091	0.039	-0.271*	-2.316	0.021	-0.168	-0.014	
Covariates	Public sector	-0.272	0.074	-0.105***	-3.665	0.000	-0.417	-0.126	
	Working week	0.017	0.003	0.145***	4.999	<.0001	0.010	0.024	
	Earnings	0.074	0.020	0.108***	3.610	0.000	0.034	0.113	
	Daily hours caring	-0.086	0.015	-0.162***	-5.610	<.0001	-0.116	-0.056	
	Mother's satisfaction with family	-0.064	0.017	-0.104***	-3.724	0.000	-0.098	-0.030	

Notes. N = 906. SEM = structural equation modeling. Unstandardized (B) and standardized (β) coefficients. R² = square multiple correlation. “WFC” = “Work-family conflict”. “FSOP”= “Family-supportive organizational perceptions scale”. Covariates in the model: “Public sector”, “Working week”, “Earnings”, “Size of the organization”, “Daily hours caring” and “Mother’s satisfaction with family”. Model fit: χ^2 (27) = 26.793, p = 0.475, TLI = 1.000, CFI = 1.000, RMSEA = 0.000 90% CI [0.000, 0.026], SRMR = 0.020.

*p<0.05. **p<0.01. ***p<0.001.

Table 3. 3. Conditional direct and indirect effects of FSOP on WFC

Conditional direct effects of FSOP on WFC							
Variable	Moderator						
FSOP	Number of children	Effect	Effect Std. ^a	Bias ^a	Boot SE ^a	Boot LL 95% CI ^a	Boot UL 95% CI ^a
	1	-0.188	-0.136	0.001	0.052	-0.237	-0.035
	2	-0.279	-0.202	-0.002	0.043	-0.287	-0.120
	3	-0.370	-0.268	-0.004	0.049	-0.370	-0.178
	4	-0.461	-0.334	-0.007	0.066	-0.479	-0.219
	5	-0.552	-0.401	-0.010	0.089	-0.594	-0.253
	6	-0.643	-0.468	-0.012	0.113	-0.715	-0.282
	7	-0.734	-0.535	-0.015	0.138	-0.840	-0.306
Indirect effects of FSOP on WFC							
FSOP → mediators → WFC							
IND1	FSOP → Reconciliation bias → WFC	-0.132	-0.095	0.000	0.031	-0.158	-0.036
IND2	FSOP → Reconciliation bias → Exemplarity → WFC	-0.035	-0.025	0.000	0.007	-0.041	-0.013
IND3	FSOP → Exemplarity → WFC	-0.037	-0.027	0.000	0.009	-0.045	-0.012

Note. Bootstrap sample = 5000 for percentile bootstrap confidence intervals. All intervals do not contain zero, which are deemed to be significant. ^a Standardized coefficients.

Our five contrasting hypotheses appear to be confirmed by the data.

“Reconciliation bias” shows a positive and significant direct effect on “WFC”. Indeed, the coefficient (standardized coefficient) for “Reconciliation bias” (in the final model in Table 3.2) is positive and statistically different from zero ($\beta = 0.138$, $p = 0.001$). But “Reconciliation bias” shows also a negative and significant effect on “Exemplarity” ($\beta = -0.253$, $p = 0.000$). On the other hand, the variable “Exemplarity” has a negative and significant effect on “WFC” ($\beta = -0.145$, $p = 0.000$). This also means that “Reconciliation bias” has an indirect effect on WFC through the mediating variable “Exemplarity” (indirect effect = 0.037, bootstrap 95% CI: 0.019, 0.059; not shown in tables). So the total effect of “Reconciliation bias” on WFC (adding the direct and indirect effects) is 0.175. So two cases that differ by one standard deviation on “Reconciliation bias” are estimated to differ (totally) by 0.175 standard deviations of WFC.

These results provide evidence in favor of hypothesis 1. It seems that the fathers of our sample have a lower subjective perception of work-family conflict when they work in companies where they consider there is a minor bias against fathers' reconciliation, and when they observe that the male workers and male managers of their companies usually use reconciliation measures. Indeed, a lower value of the "Reconciliation bias" variable and a higher value of the "Exemplarity" variable constitute an indicator that the corporate culture of the company provides a "conversion factor" or "resource" to the fathers that expands their capability of choice in the area of work-life balance, and this should lead to a use of reconciliation measures by these fathers closer to what they would really like to do (in the absence of corporate barriers), which would reduce their levels of work-family conflict.

Furthermore, the fact that a lesser "Reconciliation bias" also indirectly reduces the WFC through the mediating variable "Exemplarity", supports hypothesis 2 (Fathers who work in firms where reconciliation bias is low have the perception that in their firms there is a greater exemplarity in the use of reconciliation measures by men and male managers).

A research question we were interested to clarify in this article (from the information collected from a sample of fathers employed in organizations) was to what extent family-supportive organizations tend to conceive the reconciliation as something associated mainly with the female staff or, on the contrary, if these types of companies have a more advanced culture and are organizations where the corporate barriers against the reconciliation of the men are smaller. Hypothesis 3 specified this second possibility (fathers working in FSOP firms have the perception that in their firms there is less bias against father's reconciliation and greater effective use of reconciliation measures by men and male managers) and that is what our results seem to indicate (Table 3.2): the fact that the father works in a family-supportive organization has a negative effect on "Reconciliation bias" ($\beta = -0.691, p = 0.000$) and a positive effect on "Exemplarity" ($\beta = 0.187, p = 0.000$).

According to hypothesis 4, working in a family-supportive organization reduces the work-family conflict of the fathers directly, but also reduces the work-family conflict indirectly, through its effect on "Reconciliation bias" and on "Exemplarity". As discussed above, according to the terminology used by Hayes (2013), this structure of relations is a case of "serial multiple mediator model with two mediators". In this kind of model there are three indirect effects: IND1 (FSOP \rightarrow Reconciliation bias \rightarrow WFC); IND2 (FSOP \rightarrow Reconciliation bias \rightarrow Exemplarity \rightarrow WFC); and IND3 (FSOP \rightarrow Exemplarity \rightarrow WFC). As can be seen in Table 3.2, all these paths are statistically significant. In turn, Table 3.3 shows the estimates of each of

these three indirect effects: IND1=-0.095, bootstrap 95% CI [-0.158, -0.036]; IND2=-0.025, bootstrap 95% CI [-0.041, -0.013]; and IND3=-0.027, bootstrap 95% CI [-0.045, -0.012].

On the other hand, the direct effect of FSOP on WFC (not shown in the tables) is negative and statistically significant ($\beta = -0.204$, $p = .000$). Nevertheless in our model we considered that this direct effect of FSOP on WFC was moderated by the variable “Number of children” (we introduced in the third equation, in Table 3.2, the variable “Number of children” and an interaction variable, “FSOP \times Number of children”). So now the direct effect of FSOP on WFC is dependent, or conditional, on the number of children. Our results confirm this moderating effect (see Table 3.2): the interaction “FSOP \times Number of children” was statistically significant ($\beta = -0.271$, $p = 0.021$). Now, for instance, when the number of children =1, the direct effect of FSOP on WFC is -0.136, bootstrap 95% CI [-0.237, -0.035]; when the number of children =2, this direct effect is -0.202, bootstrap 95% CI [-0.287, -0.120]; and when the number of children =3 this direct effect is -0.268, bootstrap 95% CI [-0.370, -0.178]. So, according to hypothesis 5, the higher the number of children the greater the direct effect of FSOP on WFC (see Figure 3.2).

And finally, it is possible to obtain the total effect (sum of indirect and direct effects) of FSOP on WFC conditional on the number of children. For example, if the number of children is 3, the total effect of FSOP on WFC is -0.416 (so two cases that differ by one standard deviation on FSOP are estimated to differ by -0.416 standard deviation of WFC).

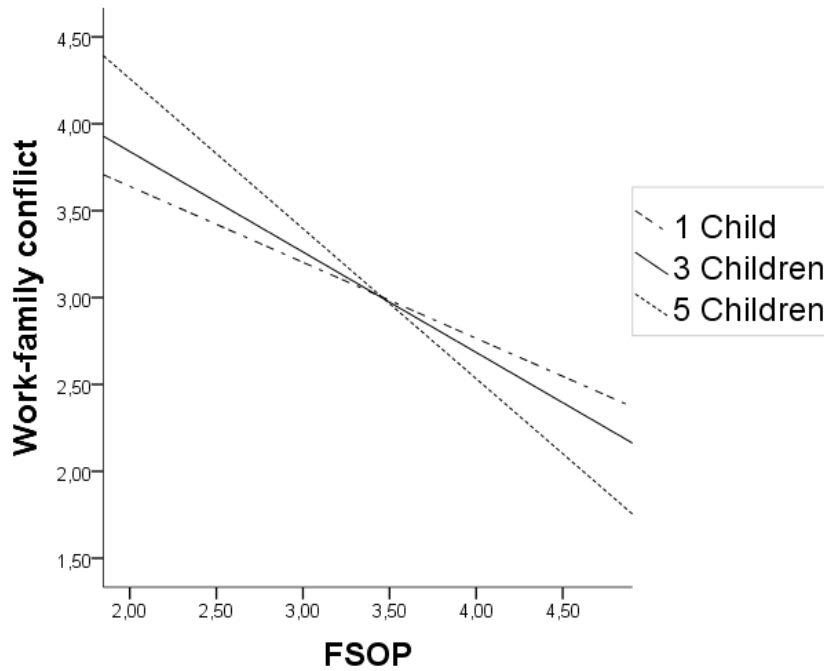


Figure 3. 2. . The moderation impact of number of children (one, three and five children) in the direct effect of FSOP on WFC.

Summarizing, according to our results, working in a family-supportive organization seems to be associated, direct and indirectly, with a reduction in the father's perception of work-family conflict.

Regarding the six control variables used in our model, all of them are statistically significant (with respect to any of the three endogenous variables) and have the expected sign. Working in the public sector (usually a family-friendly working place) is associated with less work-family conflict ($\beta = -0.105, p = 0.000$). But also it is associated with less "Reconciliation bias" ($\beta = -0.083, p = 0.001$). For example, Meil et al. (2017) states that in work environments where legal protection is higher, such as in the Spanish public as compared to the private sector, there are more acceptance for fathers using reconciliation measures (in their study they analyzed fathers using parental leaves alone). Having a long working week increases the father's perception of work-family conflict ($\beta = 0.145, p = 0.000$) (similar results were found in (similar results were found in Grandey et al. (2007) and Thompson and Prottas (2005))). Higher earnings are associated with more WFC ($\beta = 0.108, p = 0.000$) (usually better paid jobs are associated with more work demands). Working in a large organization is associated with more

“Exemplarity” ($\beta = 0.193$, $p = 0.000$) (usually large companies have more developed reconciliation policies and, according to this result, the fathers who work in this type of companies would have the perception that in their organizations men use more the reconciliation measures). Having more daily hours for care reduces the father’s WFC ($\beta = -0.162$, $p = 0.000$). And finally, “Mother’s satisfaction with the family” tends to reduce the father’s WFC ($\beta = -0.104$, $p = 0.000$). This is an interesting result. It reminds us that father’s individual decisions regarding the allocation of time at work and household are in fact the result of intra-family negotiations. Everything else constant, how the mother perceives her satisfaction with the family or with her work-family balance may influence the father’s perception of his own work-family balance.

3.7. Discussion

In this article we have dealt with a problem related to the organizational culture of companies (from the information collected from a sample of fathers employed in them). On the one hand, companies are still affected (at least in Spain) by significant inertia concerning the ideal worker. The work is designed for people who, when they have family responsibilities, delegate care to someone else (traditionally a stay-at-home wife). On the other hand, the profile of workers has undergone a step change. Almost half of them (female employees), when they become mothers, need to balance work with family life; and the other half (male employees), when they become fathers, need something very similar to what women require (for instance, 83.2% of the fathers of our sample were strongly or somewhat in agreement with the statement that “a man can be as capable as a woman to care for his baby and connect emotionally with him”). But for mothers, reaching a work-family balance and making use of the reconciliation measures is still viewed as “something compulsory” whereas for fathers these facts are still seen as optional. And given the organizational pressure of the ideal worker, finally it is women who in large part use these measures and, consequently, they are those on whom the motherhood penalty falls (Correll, Benard, & Paik, 2007), while over the fathers there is a growing sense of work-family conflict, precisely because they do not use such reconciliation measures. This gender inequality in the request and use of reconciliation measures is incorporated as an unwritten norm of the organizational culture of the company. And this area of inequality constitutes a barrier that limits the capability (agency) of many fathers to request those measures that theoretically have at their disposal.

In this context it is very important to take into account the variability that may exist between companies with regard to the culture of support for reconciliation. What this article shows, for the case of Spain, is that in companies that have an organizational culture of support for reconciliation for their workers, the pressure exerted by the ideal worker on those who would want to reconcile work and family life and, in particular, on fathers, may have relaxed somewhat. As has been shown above, FSOP companies are workplaces where there tends to be less bias against the use of reconciliation measures by men and they are companies where there exists a greater exemplarity in the use of reconciliation measures by males. They are, therefore, companies which, directly or indirectly, tend to produce a smaller agency gap among fathers (with the consequent reduction of their levels of work-family conflict).

In particular, in this article (based on the “capability approach” posed by Adler & Lenz, 2017; Drobnič & Guillén Rodríguez, 2011; Hobson, 2011; Hobson & Fahlén, 2009) we highlight and present empirical evidence about the fact that not having a bias against men in reconciliation policies, and also having exemplarity in behavior, are organizational factors or “conversion factors” (in Amartya Sen’s terminology) that expand the capability of working fathers in the field of work-family balance.

What can be done to reduce the agency gap? According to Correll (2013) if there are no family-friendly laws and if there is no corporate culture of support for the reconciliation of mothers and fathers, the family-friendly policies offered by companies may have the effect of intensifying the negative consequences of the ideal worker norms. As she says “rather than changing norms, individual accommodation policies instead potentially fuel both ideal worker norms and gender norms by clearly signaling who is not an ideal worker” (in our case, a father using the reconciliation measures).

Governments can reinforce or challenge the traditional gender order (Adler & Lenz, 2017). In the specific case of caretaker fathers, or “working fathers” (Ranson, 2012), in order to challenge the gender order a very important measure of public policy may be the equalization of parental leaves (equal and non-transferable parental leave for the father and the mother). In the case of Spain this policy change would imply that, in the end, both mother and father would enjoy sixteen weeks of non-transferable and well paid leave (Castro-García & Pazos-Moran, 2016; Fernández-Cornejo, Escot, Del-Pozo, & Castellanos-Serrano, 2016). According to Haas and Hwang (2007), this policy seems likely to contribute to men’s sense of entitlement to support for combining work and family responsibilities, and to their entitlement to use parental leave and other family-friendly measures.

On the other hand, the advances that have taken place in the attitudes and values of the Spaniards have been accompanied by insufficient progress in the institutional framework of support for the egalitarian dual earner family (Moreno Minguez et al., 2017). In this area there is a lot of room for improvement.

And as far as companies are concerned, the offer of reconciliation measures must not be simply an offer of individual accommodation measures, rather it must be accompanied by a culture change; the workplace must cease to be structured by ideas about organizational masculinity and traditional breadwinner norms (Adler & Lenz, 2017; Holter, 2007); or, in other words, it must cease to be an environment where the “flexibility stigma” problem often arises (Williams, Blair-Loy, & Berdahl, 2013). It is necessary to redefine what it means to be a good and productive worker, for example, by recognizing and internalizing the principles that all workers have needs outside of work and that the need to reconcile has no sex. To make progress in this area it is necessary to raise awareness among companies and to transmit to them that this change in their organizational culture is a strategic aspect, or “business case”, for a good performance and development of the company. As the results of this article suggest, an organizational advance of this type would shrink the agency gap and reduce work-family conflict experienced by many fathers. And this would increase the job satisfaction of working fathers (Grandey et al., 2007), with all the positive aspects for the company that this entails.

Appendix

Table 3.4. FSOP (family-supportive organizational perceptions scale). Allen (2001).

-
1. Work should be the primary priority in a person's life (R)
 2. Long hours inside the office are the way to achieving advancement (R)
 3. It is best to keep family matters separate from work (R)
 4. It is considered taboo to talk about life outside of work (R)
 5. Expressing involvement and interest in nonwork matters is viewed as healthy
 6. Employees who are highly committed to their personal lives cannot be highly committed to their work (R)
 7. Attending to personal needs, such as taking time off for sick children is frowned upon (R)
 8. Employees should keep their personal problems at home. (R)
 9. The way to advance in this company is to keep nonwork matters out of the workplace (R)
 10. Individuals who take time off to attend to personal matters are not committed to their work (R)
 11. It is assumed that the most productive employees are those who put their work before their family life (R)
 12. Employees are given ample opportunity to perform both their job and their personal responsibilities well
 13. Offering employees flexibility in completing their work is viewed as a strategic way of doing business
 14. The ideal employee is the one who is available 24 hours a day (R)
-

“(R)” indicates the item is reverse coded so that higher scores indicate more positive perceptions of the organization's support for work/nonwork balance. The items were preceded by the following instructions: “To what extent do you agree that each of the following statements represent the philosophy or beliefs of your organization (remember, these are not your own personal beliefs, but pertain to what you believe is the philosophy of your organization)”.

4

CONSTRUCTING FATHERHOOD IN THE NORTH AND SOUTH: PAID PARENTAL LEAVE, WORK AND CARE IN ICELAND AND SPAIN

Abstract^{12,13,14}

While Iceland and Spain historically belong to two different welfare regimes, both countries have enacted fathers' quotas to their systems of paid parental leave. From the year 2000 Iceland has provided fathers with a three-month long quota, and Spain enacted a 13 days fathers' quota in 2007. Using survey data, the article addresses whether leave use is reflected in parents' paid and unpaid labor. Multi-group structural equation modeling (and path analysis) was used to describe how leave use, combined with parents' working hours after returning to work, is associated with fathers' involvement in care. Fathers' leave use was found to be associated with their involvement in care in both countries, both directly and also indirectly through the reduction in working hours. Icelandic fathers were more engaged in care than fathers in Spain which could be explained by the longer period of paid leave available for fathers in Iceland.

¹² Article in peer evaluation.

¹³ This article is the result of a research stay at the University of Iceland. Authors: Ásdís A. Arnalds, Sabina Belope-Nguema, Guðný Björk Eydal, and José Andrés Fernández-Cornejo.

¹⁴ My contribution has consisted in developing the different stages of the process of elaboration of the article: the review of the literature, the formulation of hypotheses, the assembly of the datasets, the application of the methodology of structural equation modeling and discussion.

The achievements of the research stay at the University of Iceland were intended to form part of this thesis. Mainly, the work has been developed in conjunction with Ásdís Arnalds (PhD Student). The direction of our supervisors has also been necessary. Thanks also to Ann-Zofie Duvander for all her help with this article.

Keywords

Care, Fatherhood, Parental leave, Work

4.1. Introduction

Iceland, characterized by high levels of female employment and a relatively high fertility rate, has come far in adopting the so-called ‘dual-earner/dual-carer’ model. Generous paid parental leave schemes, for both parents, along with early childhood education and care services has contributed to the development of this model in the Nordic countries, to which Iceland belongs (Eydal & Rostgaard, 2013). In 2000 Iceland enacted a new parental leave act, providing fathers with a three months quota¹⁵. The aim was to encourage fathers’ participation in the care of their children and to enable both parents to better reconcile work and family responsibilities, thereby facilitating mothers’ re-entry into the labor market after childbirth. At the time the scheme contained one of the most generous father-targeted leave entitlements in the world, both in terms of the length of the fathers’ quota and economic compensation (Moss & O’Brien, 2006).

The welfare states of Southern Europe have traditionally been characterized by limited participation of women in the labor market. However, in the past decades, Spain has been departing from this male breadwinner model and taking steps towards a ‘dual-earner/dual carer model’ with the introduction of work/family policies and the expansion of early childhood education and care services for children under three (Escobedo & Wall, 2015; Moreno Mínguez, 2015; Valiente, 2010). In 2007 Spain encouraged shared parenthood by introducing a 13 days fathers’ quota to its system of paid parental leave, which since has gradually increased to five weeks.

The literature has documented how policy frameworks matter for the gendered division of paid and unpaid labor and in both Iceland and Spain the number of fathers using their leave rights rose considerably after the fathers’ quotas were introduced (Arnalds et al., 2013; Castro-García & Pazos-Moran, 2016). While this certainly indicates more shared caring between parents, it is important to measure fathers’ part in daily care for their children when the leave period is over in order to address the question of how engaging fathers to take leave after

¹⁵ The fathers’ quota is an independent non-transferable entitlement to paid leave.

childbirth leads to gender equality. The article addresses the impact of parental leave policies on fathers' participation in care in Iceland and Spain, two countries providing fathers with individual entitlements to paid leave after childbirth, although Spain still has a shorter quota for fathers than Iceland. With the use of multi-group structural equation modeling (and path analysis) the aim is to examine the determinants of fathers' involvement in the care of their children by addressing the interconnection between parents' leave use, their work hours and fathers' participation in care. Comparing these two countries will provide valuable insight into whether engaging fathers to use parental leave by use of fathers' quotas leads to shared parenting in countries belonging to different 'worlds of welfare'.

4.2. Parental leave policies and gender roles

Esping-Andersen (1990) book on *The Three Worlds of Welfare Capitalism* sparked a huge debate within welfare state studies and feminist scholars (i.e. (Anttonen & Sipilä, 1996; Lewis, 1992; Orloff, 1993; Sainsbury, 1994) criticized him for neglecting the dimension of gender. This critique of Esping-Andersen's original work led to the construction of the term defamilialization as an alternative to his scale of de commodification (Esping-Andersen, 1999; Lister, 1994). The concept focuses on the way social policies reduce family burdens and thus provide women with the opportunity to engage in paid work outside the home. However according to Saxonberg (2013), scholars have been unsure of how to measure parental leave policies in terms of defamilialization and often come up with different results. He thus proposed a welfare typology based on the notion of degenderization, i.e. whether policies promote different gender roles for men and women. In Saxonberg's writings, leave schemes are explicitly genderizing if they give mothers incentives for leaving the labor market for a long period without encouraging fathers to use some part of the leave. Implicitly genderizing policies do not offer any parental leave benefits or only a short leave for mothers. (Kurowska, 2018) later argued that when evaluating how policies support work-family reconciliation, both the defamilialization and the degenderization perspectives should be applied. Defamilialization, to address how well policies are designed to unburden the family from care-taking and thus enable both parents to work, and degenderization to address how policies offer the possibility to increase gender equality in paid and unpaid labor.

Regardless of which typologies are used, comparative research in general comes to the conclusion that the Nordic countries represent a role model for gender equality due to their

family friendly policies that support the so-called ‘dual-earner/dual-caregiver’ model (Crompton, 1999; Ellingsæter & Leira, 2006; Pfau-Effinger, 2005). This is a model envisioning a social and economic arrangement in which women and men are encouraged to engage in paid work outside the home. An emphasis is placed on the availability of early childhood education and care services and paid parental leave for both parents. According to Saxonberg (2013), parental leave schemes in Sweden, Iceland and Norway do the most to encourage degenderization by the use of fathers’ quotas. The fathers’ quota is a non-transferable entitlement to leave, based on the notion that it is of children’s best interest that both parents are involved in their upbringing and that gender equality in employment requires an equal division of domestic labor (Duvander & Lammi-Taskula, 2011; Eydal et al., 2015).

Since welfare state scholars started placing emphasis on the dimension of gender in the 1990’s the Southern European welfare states have ranked at the other end of the spectrum. They have been regarded to belong to a male breadwinner model and to be more familialistic (see for example (Backhans, Burström, & Marklund, 2011; Esping-Andersen, 1999; Moreno Mínguez, 2012; Nordenmark, 2015). The family has been responsible for welfare provision and these countries have been thought to lag behind most western European countries when it comes to state provision of care and the introduction of work-family reconciliation policies (Esping-Andersen, 2009). However, this has changed in the past decades. In Spain, the introduction of the fathers’ quota in 2007 coincides with the development of the dual-earner model (Naldini & Jurado, 2013). Still, according to Moreno Mínguez (2012, 2013), Spain has a long road to go in its quest for gender equality within the family and paid work.

4.3. Parental leave use and fathers’ time allocation

But how do parental leave policies enhance degenderization in parents’ practices? The gender construction perspective and bargaining perspective are two strands of theories that can shed light on how taking leave matters for fathers’ time allocation. From the gender construction perspective, ideas on appropriate gender roles are reinforced through interaction and the gendered division of labor is derived from women and men doing the sort of work defined appropriate for their gender (Coltrane, 1989; Hochschild, 1989; West & Zimmerman, 1987). But just as gender is constructed, it can also be deconstructed (Deutsch, 2007). By taking leave after childbirth, fathers may develop greater confidence in caring and become more committed to family life (Rehel, 2014). A period of leave for fathers may therefore reshape

societal ideas on what it means to be a father.

In theories on household bargaining (Lundberg & Pollak, 1994, 1996; Manser & Brown, 1980; McElroy & Horney, 1981), couples strive to reach an agreement on household labor based on the resources they have achieved through education and employment. The more equal the couple's resources, the more equally they will divide domestic tasks, including child-rearing. The unequal position of men and women in the labor market may encourage men to commit more time to market work while the home becomes the women's domain. The transition to parenthood may further weaken mothers' bargaining position as they reduce their labor market participation in order to take care of their child. When a father takes leave after childbirth it could be argued that his advantage stemming from being continually employed will diminish. This should then reduce the degree of specialization within the household.

The expected outcome is the same under the gender construction perspective and the bargaining perspective, namely, that fathers who take parental leave will become more involved in caring for their children after the leave period is over. The longer the leave, the more the father becomes involved.

4.4. The social context of parents in Iceland and Spain

The fathers' quota was introduced in Iceland in 2000 when the country enacted a law providing each parent with a three months quota and additional three months of leave that parents can divide as they choose. Due to its extensive rights for fathers, the law has been classified as a 'gender-equality-orientated model' (Lister, 2009). Working parents receive 80% of their earnings while on parental leave with a ceiling, that was 4.257 Euros per month in 2017. Full-time students and parents working less than 25% receive flat-rate benefits. Parental leave benefits are paid from a public parental leave fund financed by a part of the insurance levy paid by all employers and from state contributions (Eydal & Gíslason, 2017).

In Spain, women's participation in paid work was thought to work against family unity during Francoism but the transition to democracy in the late 1970's brought with it policies to promote the incorporation of women into work (Pérez-Caramés, 2014). In 1980 fathers were entitled to two leave days paid by employers. In 2007 a new law provided fathers with a 13 days fathers' quota in addition to the two days they were entitled to before. The fathers' quota

was extended to four weeks in 2017 and to five weeks in 2018.¹⁶ Mothers are entitled to 16 weeks of paid leave, of which six weeks are obligatory. Employed parents receive 100% of their earnings while on leave, paid by the Social Security Fund, though with a ceiling of 3,700 Euros per month in 2017. Each parent is entitled to take unpaid leave for up to three years after childbirth. Mothers who are not entitled to earnings-related benefits receive a flat-rate payment for 42 days after delivery (Meil, Lapuerta & Escobedo, 2017).

In both countries fathers' leave use increased after the introduction of the fathers quota (Arnalds et al., 2013; Escobedo, 2009). However, the financial crisis that hit the two countries in 2008 had negative consequences on fathers' leave use. In Iceland the ceiling on benefits was lowered during the crisis which negatively affected fathers' leave use (Sigurdardottir & Garðarsdóttir, 2018) and in Spain the huge increase in unemployed men led to a 15.8% decrease in the use of paternity leave from 2010 to 2013 (Meil, Romero-Balsas & Rogero-García, 2018).

Mothers' labor market participation is affected by the gap between the end of paid parental leave and the age children are able to enter early childhood education and care. If such services are unavailable, mothers may not have another alternative than to take low-paid or unpaid leave (see for example Castro-Garcia & Pazos-Moran, 2016; Eydal, 2008). In Iceland parents often have to bridge a one and a half year gap while in Spain the gap is approximately two and a half years. As seen in Table 4.1, a larger percentage of up to two years old children in Iceland than in Spain attend early childhood education and care services while in both countries the vast majority of three year olds attend such services.

¹⁶ In 2018 a bill was introduced that will extend the fathers' quota to 16 weeks in five years.

Table 4. 1. The social context of parents in Iceland and Spain

	Iceland	Spain
<i>Population</i> ^a		
Number of inhabitants in 2017	0.3 million	46.5 million
Total fertility rate in 2016	1.7	1.3
<i>Paid parental leave</i> ^b		
Number of paid weeks reserved for mothers in 2017	13	16
Number of paid weeks reserved for fathers in 2017	13	4
Number of paid weeks to be used by either parent in 2017	13	0
Take-up rate for fathers in 2016	81%	60%
<i>Labor market</i> ^a		
Employment rate for men in 2017	90.5	71.5
Employment rate for women in 2017	84.5	59.6
<i>Early childhood education and care</i> ^c		
Percentage of 0-2 year olds enrolled in ECEC in 2014	60%	38%
Percentage of 3-5 year olds enrolled in ECEC in 2014	96%	97%
<i>Attitudes towards the gender distribution of leave use in 2012</i> ^c		
Percentage stating that the leave should be used entirely by the mother	3%	34%
Percentage stating that the leave should be used mostly by the mother	50%	33%
Percentage stating that the leave should be split evenly between parents	47%	33%

Sources: a 'Eurostat', n.d. b Blum, Koslowski, & Moss, 2017 c 'OECD family database', 2018

4.5. Research focus

This article addresses the interconnection between parents' leave use, their work hours and fathers' participation in the care of their children in Iceland and Spain, two countries traditionally belonging to different policy regimes and have different amount of days reserved for fathers.

A growing body of research views the association between fathers' use of their quota rights and contact with their children later in life. In general, these studies conclude that an early close connection between fathers and children continues throughout childhood as fathers' leave use is positively associated with their participation in care after the leave (see for example Almqvist & Duvander, 2014; Arnalds et al., 2013; Fernández-Cornejo, Escot, Del-Pozo, & Castellanos-Serrano, 2016; Haas & Hwang, 2008; Romero-Balsas, 2013). Very limited research has however focused on the association between mothers' leave use and fathers' involvement in the care of their children. An exception is a study by Schober and Zoch (2018) who found that couples in Germany shared childcare less equally if the mother had taken a long leave after childbirth. Based on these findings a positive direct effect of fathers' leave length

on fathers' involvement in the care of their children and a negative direct effect of mothers' leave length on fathers' involvement in care is predicted.

Hypothesis 1a: Fathers' leave use is positively associated with their participation in care.

Hypothesis 1b: Mothers' leave use is negatively associated with fathers' participation in care.

Fathers' leave use is also thought to reduce the time they spend on paid work as their child grows older, giving them more time for child-rearing (Kitterød, 2013; Kotsadam & Finseraas, 2011; Rege & Solli, 2010). Therefore, in countries that offer fathers' quotas, fathers tend to work less (Bünning & Pollmann-Schult, 2016). The introduction of fathers' quotas also facilitates mothers' return to work after childbirth (Eydal, 2008; Farré & González, 2017; Kitterød & Rønsen, 2015). Thus, reserving leave for fathers may result in mothers taking shorter leaves after childbirth, which then may facilitate mothers' faster take-up of full-time work. Therefore, it is hypothesised that fathers' leave use reduces their working week which then increases their involvement in care. Similarly, it is predicted that the longer leave used by mothers, the less they work which then reduces fathers' involvement.

Hypothesis 2a: The length of fathers' working week is negatively associated with their involvement in care.

Hypothesis 2b: The length of mothers' working week is positively associated with fathers' involvement in care.

Hypothesis 3a: Fathers' working week mediates the association between fathers' leave length and father's involvement in care.

Hypothesis 3b: Mothers' working week mediates the association between mothers' leave length and father's involvement in care.

Cross-national studies have shown that fathers' time with their children is higher in countries with generous father-targeted leave policies (Boll, Leppin, & Reich, 2014; Sullivan, Coltrane, McAnnally, & Altintas, 2009). As Iceland has a longer tradition of encouraging

fathers' engagement in care by use of father friendly leave policies, it is hypothesized that Spanish fathers are less involved in the care of their children than Icelandic fathers. Finally, given the longer tradition of fathers' involvement in care in Iceland than in Spain, it is hypothesized that the country variable moderates the association between fathers' working week and fathers' involvement in care and also the association between mothers' working week and fathers' involvement.

Hypothesis 4: The participation of Spanish fathers in the care of their children is lower than that of Icelandic fathers.

Hypothesis 5a: The length of fathers' working week has a stronger negative effect on fathers' participation in care in Spain than in Iceland.

Hypothesis 5b: The length of mothers' working week has a stronger positive effect on fathers' participation in care in Spain than in Iceland.

Figure 4.1 presents the hypothesized model to be tested based on the reviewed literature and the objectives of the article.

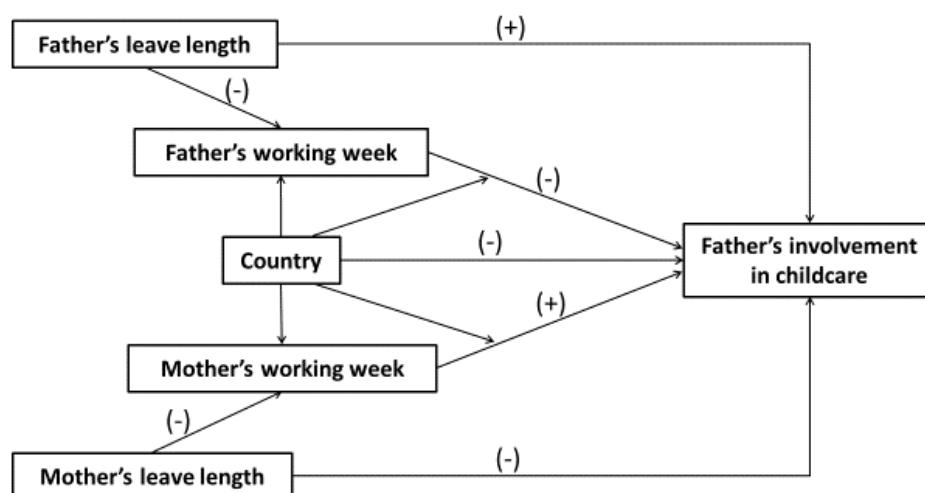


Figure 4.1. Hypothesized model of the determinants of fathers' involvement in the care of their children

4.6. Methods

4.6.1. Data

The data consist of an assembled database from two surveys. The Icelandic data were collected in 2013 with a survey among parents of four year old children. A letter, containing a web address to enter an online survey, was sent to the home address of the entire population of children born in 2009, drawn from the Icelandic National Registry, who were their mothers' firstborn. It was left to the parents to decide which of them completed the survey (which was done by mothers in 75% of cases, by both parents in 20% of cases and by fathers in 5% of cases). The population consisted of parents of 1929 children. Out of these, 1218 completed the survey, resulting in a response rate of 63%.

The Spanish data were collected in 2012 with a survey among parents of three to eight year old children, residing in Madrid and its metropolitan area. A stratified random sample was drawn from the 917 kindergarten and primary schools in the area. Stratification was made in 10 homogeneous geographic zones, according to the socioeconomic level. Then, schools were randomly selected (in each of these 10 zones). In each school, the school principal selected one class in the first year of pre-school education through the first year of primary education. Questionnaires were distributed among students for them to give to their parents. The children then returned filled-out questionnaires to their teacher in an anonymous envelope. Of the 2,250 questionnaires handed out, 1,130 were returned, resulting in a 50% response rate.

Employed parents, living together at the time of childbirth, were selected for data analysis. The analysis was based on 709 cases in Iceland and 593 cases in Spain. Although the two surveys contained similar questions, combining data from two different surveys has some limitations. In the Icelandic data-set all children are in their fourth year, while in the Spanish data-set children are three to eight years old. Furthermore, in Iceland the child was the mothers' first-born, while in Spain parents may have older children. For this reason, the average number of children was lower for the Icelandic couples ($\bar{x} = 1.65$) than Spanish ones ($\bar{x} = 1.81$).

4.6.2. Measures

The dependent variable, *fathers' involvement in the care of their children*, is an indicator for routine child-rearing tasks. This variable is thus a measurement of the level of

degenderization within the household. Playful activities were excluded as fathers spend most of their care time on educational and recreational activities that are a less barrier to participation in paid work than having to do routine tasks at certain times of the day (Craig, 2006). The dependent variable was computed using six variables. These were how parents divided the tasks of feeding the child, taking it to or picking it up from day-care, putting it to bed at night, bathing the child and taking care of it when it is sick. These tasks, with the exception of bathing the child, were more often performed by fathers in Iceland than in Spain (Table 4.2).

Table 4. 2. Descriptive statistics for the variables measuring the division of care

	Iceland			Spain			Ratio Iceland/Spain
	N	Mean	SD	N	Mean	SD	
Who feeds the child?	651	2.62	0.65	541	1.93	0.84	1.36 ***
Who takes/picks up the child to/from day-care?	649	2.47	0.86	490	2.38	1.11	1.04 *
Who puts the child to bed at night?	650	2.76	0.73	570	2.35	0.97	1.17 ***
Who bathes the child?	651	2.58	0.76	571	2.66	1.15	0.97
Who takes care of the child when it is sick?	648	2.43	0.73	453	2.05	0.98	1.19 ***

Note: Mann-Whitney U test for differences between Iceland and Spain: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

The variables were summed and divided by the total number of variables. The values ranged from 1 to 5, with 1 representing those reporting that the tasks were performed mostly by the mother and 5 mostly by the father. The higher the score, the more involved the father was in these activities. Chronbach's alfa was 0.716 for Spain and 0.763 for Iceland. The dependent variable has some limitations as in Iceland parents answered questions on the division of care four years after childbirth while in Spain the questions concerned the first two years.

Five independent variables were used for the analysis. *Fathers' and mothers' leave length* was measured in weeks and computed for Spain by summing responses to how parents used their maternity or paternity leave, the breastfeeding leave (usually 2 weeks), unpaid

parental leave, vacation days and other leaves. For Iceland the duration of leave was calculated by summing each individual's responses to questions on whether the mother and father were on parental leave or on vacation each month from birth until the child was 18 months old. *Fathers' and mothers' working week* are based on responses to questions on parents' average weekly working hours three years after childbirth, ranging from 1 (less than 10 hours) to 6 (more than 50 hours). *Country* is a binary variable, coded as 1 for Spain and 0 for Iceland.

Five control variables were used for the analysis. *Fathers' and mothers' level of education* has six categories: (1) Primary school or less (2) Secondary school or upper secondary school (3) First level professional training (4) Upper level professional training (5) Undergraduate university degree (6) Graduate university degree. *Father and mother is a manager or professional* are binary variables coded as 1 for managers or professionals and 0 for others. Finally there is a binary variable for having *two or more children*, where the value 1 represents parents who had more than one child and 0 those with one child.

4.6.3. Empirical strategy

The analysis was carried out in three steps. First, descriptive statistics of the variables by country are shown in Table 4.3. Second, path analysis was carried out with the whole sample in order to analyze the effect of parental leave use and country on fathers' involvement in the care of their children. This step also addresses the indirect effect of leave use on fathers' involvement, through parents' working week. The results of the path analysis are shown in Figure 4.2 and Table 4.4. Third, with the aim of answering whether the country moderates the association between fathers' and mothers' working week and fathers' involvement in care, multi-group path analysis was carried out, separating the two samples. The results of this analysis are shown in Figures 4.3 and 4.4 and in Table 4.5.

4.7. Results

4.7.1. Descriptive statistics

As seen in Table 4.3, Icelandic fathers were more involved in the care of their children than Spanish fathers (the country ratio was 114.7%). Icelandic fathers also used a longer leave than fathers in Spain (the country ratio was 453.8%) which can be explained by the longer

fathers' quota in Iceland than in Spain. While Icelandic mothers used more leave on average than mothers in Spain, there was less difference between the two countries in mothers' length of leave than in fathers' leave length (the country ratio was 103.4%). Furthermore, fathers and mothers in Iceland worked more hours after parental leave, on average, than mothers and fathers in Spain (the country ratios were 112.7% and 117.1%, respectively).

Table 4. 3. Descriptive statistics

		N	Min.	Max	Mean/%	SD	Comparison Iceland-Spain
Father's involvement in care	Iceland	629	1.00	4.00	2.57	0.53	114.7% **
	Spain	405	1.00	4.60	2.24	0.70	
Father's leave length	Iceland	709	0.00	28.00	10.53	6.13	453.8% **
	Spain	593	0.00	68.14	2.32	4.20	
Mother's leave length	Iceland	709	0.00	30.00	23.66	6.43	103.4% **
	Spain	593	0.00	176.14	22.89	17.36	
Father's working week	Iceland	586	1.00	6.00	4.88	0.88	112.7% **
	Spain	564	1.00	6.00	4.33	0.91	
Mother's working week	Iceland	427	1.00	6.00	4.11	0.98	117.1% **
	Spain	542	1.00	6.00	3.51	1.17	
Father's educational level	Iceland	658	1.00	6.00	3.79	1.78	103.8%
	Spain	589	1.00	6.00	3.65	1.76	
Mother's educational level	Iceland	661	1.00	6.00	4.19	1.72	104.2%
	Spain	593	1.00	6.00	4.02	1.78	
Father is a manager or professional	Iceland	588	0.00	1.00	42.9%	-	5.8% *
	Spain	580	0.00	1.00	37.1%	-	
Mother is a manager or professional	Iceland	433	0.00	1.00	57.5%	-	24.4% **
	Spain	586	0.00	1.00	33.1%	-	
Two or more children	Iceland	709	0.00	1.00	57.5%	-	-14.3% **
	Spain	593	0.00	1.00	71.8%	-	

Notes: Mann-Whitney U test for differences between Iceland and Spain for variables 1 to 7. Chi-square test between Iceland and Spain for variables 8 to 10. P-values: *p<0.05; **p<0.01.

4.7.2. Path analysis

Structural equation modeling (SEM) was performed using SAS 9.4, the CALIS procedure. A robust estimation of the parameters was carried out by the Robust Maximum Likelihood (MLR) method, suggested by Satorra and Bentler (1988, 1994), since this technique is sensitive to lack of normality, and skewed distributions that have a high kurtosis. In this step a mediation model was considered, where all control variables affect all endogenous variables. The fit of the model was acceptable: $SB-\chi^2(3) = 5.801, p = 0.122$ ($p > 0.05$ is acceptable), $TLI = 0.979$ (near one is acceptable), $RMSEA = 0.027$ (< 0.07 is acceptable), $SRMR = 0.007$ (< 0.06 indicates a good fit) and $CFI = 0.999$ (must exceed 0.9). In order to improve this first model non-significant covariates were eliminated leaving a model with an acceptable global fit ($SB-\chi^2(9) = 7.413, p = 0.594$; $TLI = 1.004$; $RMSEA = 0.000$; $SRMR = 0.008$; $CFI = 1.000$).

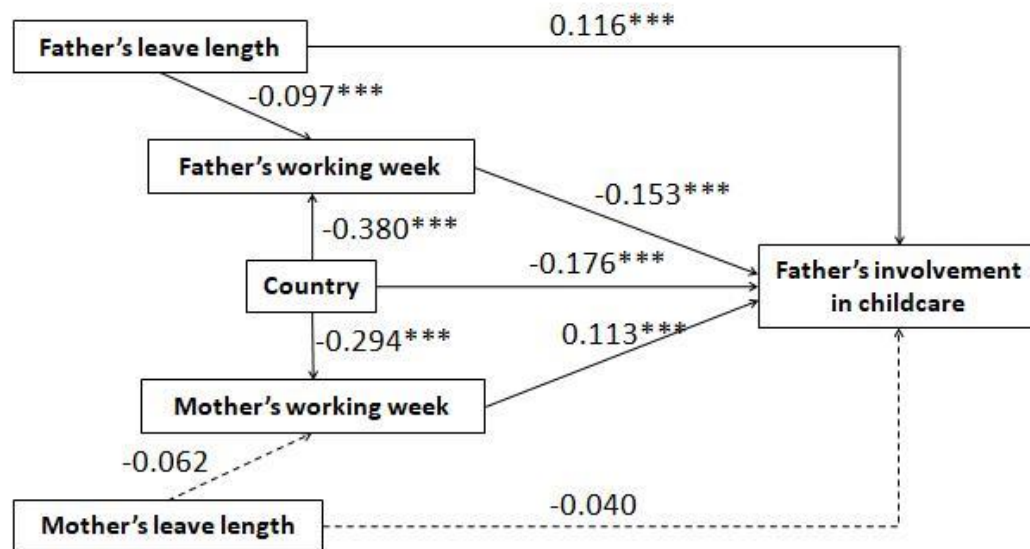
Mothers' leave length was neither associated with fathers' involvement in care ($\beta = -0.040, p = 0.186$), nor with mothers' working week ($\beta = -0.062, p = 0.130$). However, mothers' working week was positively and significantly associated with fathers' involvement ($\beta = 0.113, p = 0.001$). Therefore, there was no indirect effect of mothers' leave length on fathers' involvement in care through mothers' working week (indirect effect = $-0.007, p = 0.166$, shown in Table 4.4). The total effect of mothers' leave length on fathers' involvement in the care of their children was -0.047 . This means that two cases that differ by one standard deviation in mothers' leave length are estimated to differ (totally) by -0.047 standard deviations in fathers' involvement. These results support hypothesis 2b, but neither hypothesis 1b nor hypothesis 3b.

All other hypotheses were confirmed according to the 0.05 significant level. Fathers' leave length had a positive and significant effect on fathers' involvement in care ($\beta = 0.116, p < 0.001$) (confirming hypothesis 1a). Fathers' leave length also had a negative and significant effect on fathers' working week ($\beta = -0.097, p < 0.01$) and fathers' working week showed a negative and significant effect on fathers' involvement ($\beta = -0.153, p < 0.001$). Thus, fathers' leave length had an indirect effect on fathers' involvement in care through the mediating variable fathers' working week (indirect effect = $0.015, p = 0.014$, shown in Table 4.5). Adding the direct and indirect effect, the total effect of fathers' leave length on fathers' involvement is 0.131 . Thus, between two cases that differ by one standard deviation on fathers' leave length the estimated difference is 0.131 standard deviations of fathers' involvement in care. All these results provide evidence in favor of hypothesis 1a, 2a and 3a.

Spanish fathers were less involved in care than Icelandic fathers ($\beta = -0.176, p < 0.001$) (confirming hypotheses 4), implying dissimilarities in cultural values and Iceland's emphasis on gender equality policies. The country variable also showed a negative and significant effect on fathers' and mothers' working week ($\beta = -0.380, p < 0.001$ and $\beta = -0.294, p < 0.001$, respectively). Hypothesis 5a and 5b, referring to the moderation by country are analyzed later.

Considering the control variables, fathers' involvement in the care of their children was influenced by fathers' ($\beta = 0.081, p < 0.05$) and mothers' ($\beta = 0.073, p < 0.05$) educational level. Education is often used as a proxy for more gender equal attitudes (see for example Fernández-Cornejo et al., 2016) which may influence how parents arrange care for their children. The father being a manager or professional was also associated with fathers' involvement ($\beta = 0.079, p < 0.01$), which could be explained by the long work hours carried out by non-professionals, especially unskilled workers, preventing them from becoming directly involved in care. Finally, there was a negative effect of the number of children on mothers' working week ($\beta = -0.054, p < 0.05$), indicating that mothers who had two or more children reduced their working hours to a greater extent than those with one child.

In summary, Figure 4.2 shows that fathers' leave length was positively associated, directly and indirectly, with their involvement in care, while mothers' leave length was neither directly nor indirectly associated with fathers' involvement. When comparing fathers' involvement in care between the two countries, Spanish fathers tended to be less involved than Icelandic fathers.



P-values: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Figure 4. 2. Model 1

Table 4. 4. Direct, indirect and total effects of fathers'/mothers' leave length on fathers' involvement in the care of their children

		Effect Std.	SE	t	P
Direct effects					
<i>Variable</i>					
Father's leave length		0.116	0.031	3.720	<0.001
Mother's leave length		-0.040	0.031	-1.322	0.186
Indirect effects					
<i>Variable</i>	<i>Mediator</i>				
Father's leave length	Father's working week	0.015	0.006	2.454	0.014
Mother's leave length	Mother's working week	-0.007	0.005	-1.386	0.166
Total effect					
<i>Variable</i>					
Father's leave length		0.131	0.031	4.250	<0.001
Mother's leave length		-0.047	0.031	-1.521	0.128

4.7.3. Multi-group path analysis

Multi-group analysis, using Amos 22, was carried out to examine whether the length of fathers' and mothers' working week had a stronger effect on fathers' involvement in care in Spain than in Iceland. In this step, all paths of the final model were evaluated and compared between the two countries. It was hypothesized that the longer working week of fathers had a stronger negative effect on fathers' involvement in care in Spain than in Iceland (hypothesis 5a). By contrast, it was assumed that the longer working week of mothers had a stronger positive effect on fathers' involvement in care in Spain than in Iceland (hypothesis 5b).

First, a comparison between the unconstrained model ($\chi^2 (18) = 18.754, p = 0.407$, TLI = 0.998, RMSEA = 0.006, CFI = 1.000 and SRMR = 0.015, which has an acceptable fit) and the constrained model ($\chi^2 (33) = 121.762, p < 0.001$, TLI = 0.860, RMSEA = 0.045, CFI = 0.949 and SRMR = 0.044 that should present a worse fit if moderation is found) verified that the models for the two countries were not identical ($\chi^2 (15) = 103.008, p < 0.001$). Then, the multiple group effect of fathers' and mothers' working week on fathers' involvement in the care of their children was tested. There was not a statistical significant difference between the two countries in the effect of fathers' working week on fathers' involvement in care ($\chi^2 (1) = 1.688, p = 0.194$) (Figure 4.3), and thus hypothesis 5a was not confirmed. However, there was a difference between the two countries in the effect of mothers' working week on fathers' involvement ($\chi^2 (1) = 27.181, p < 0.001$) (Figure 4.4). The length of mothers' working week had a stronger positive effect on fathers' participation in care in Spain than in Iceland, supporting hypothesis 5b.

In the previous analysis, fathers' leave length was found to influence their involvement, both directly and indirectly. In the multi-group analysis the two countries were analyzed separately in order to see if the association was the same for both countries. As shown in Table 4.5, fathers' leave length was associated with fathers' involvement in both Iceland ($\beta = 0.114, p < 0.01$) and Spain ($\beta = 0.081, p < 0.05$). In Spain, the longer leave used by fathers also increased their involvement in care indirectly, through their working week ($\beta = 0.016, p < 0.05$). The indirect effect was marginally significant (0.10 significant level) for Icelandic fathers ($\beta = 0.006, p < 0.10$). Nevertheless, no evidence in favor of mediation moderated by country was found. Therefore, the effect of fathers' leave length on fathers' involvement in care was the same in both countries ($\chi^2 (1) = 0.203, p = 0.652$). However, the effect of being a manager or professional and the effect of mothers' education on fathers' involvement were higher in

Iceland than Spain ($\chi^2 (1) = 3161, p = 0.075$ and $\chi^2 (1) = 3.076, p = 0.079$), although marginally significant.

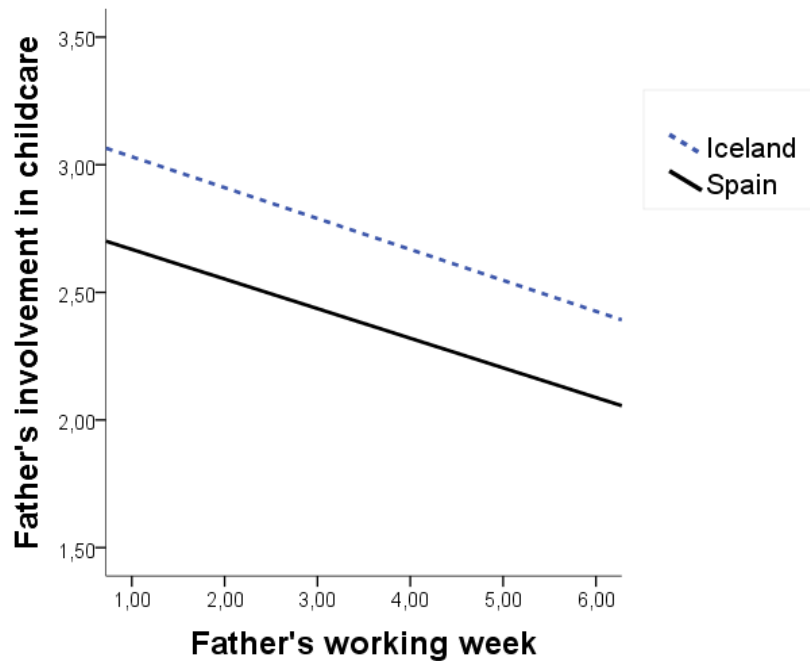


Figure 4. 3. The moderation impact of country (Iceland and Spain) in the effect of father's working week on father's involvement in the care of their children

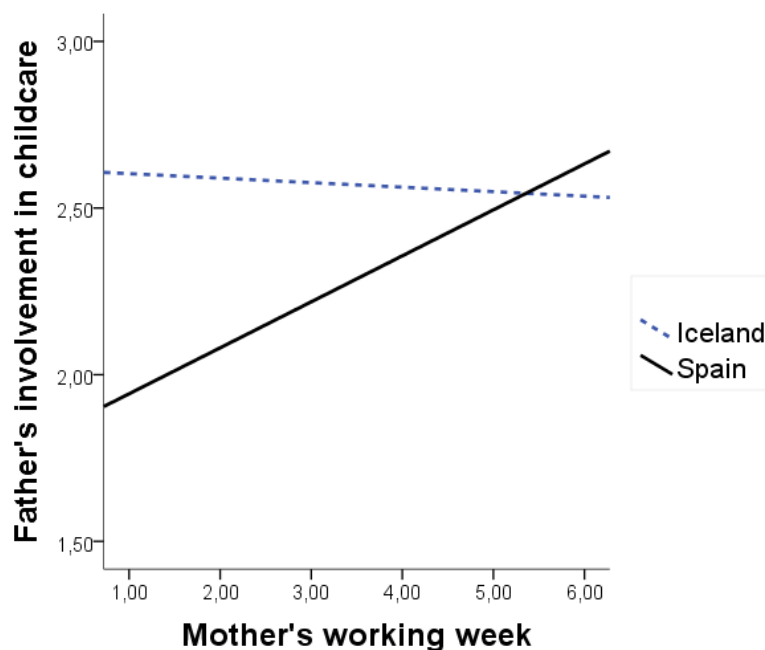


Figure 4. 4. The moderation impact of country (Iceland and Spain) in the effect of mother's working week on father's involvement in the care of their children

Table 4. 5. Direct, indirect and total effects of father's leave length on father's involvement in the care of their children in Iceland and Spain

Variable	Mediator		Father's involvement in care		
			Direct	Indirect	Total
Fathers' leave length	Fathers' working week	Iceland	0.114 ***	0.006 *	0.120 ***
		Spain	0.081 **	0.016 **	0.096 ***

Notes: Standardized coefficients are shown.

Bootstrap robust estimates of standard errors for all the coefficients: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

4.8. Discussion

The aim of this article was to contribute to research on how social policy may influence gender relations by presenting findings on the interconnection between parents' leave use, their work hours after returning to work and fathers' involvement in the care of their children. The article compares findings from Iceland and Spain, two countries that have enacted fathers' quotas to their systems of paid parental leave while historically belonging to different welfare regimes.

Analysis of data on dual-earner couples in Iceland and Spain revealed that mothers' leave length was not associated with fathers' involvement in the care of their children. However, fathers' leave use increased their involvement in care, both directly, and indirectly through the reduction in working hours. Thus, encouraging fathers to take leave promotes degenderization (Saxonberg, 2013) in paid and unpaid work, by giving fathers the opportunity to bond with their children.

In both countries fathers worked more hours after the period of paid parental leave than mothers. Taking the strand of household bargaining theories, the long hours of work carried out by fathers provide them with power to opt out of household duties (Lundberg & Pollak, 1996, 1994; Manser & Brown, 1980; McElroy & Horney, 1981). The more the fathers worked, the less they were engaged in care in both countries. Only in Spain, however, did the longer working week of mothers increase fathers' involvement. This could be related to Iceland's long experience with encouraging fathers to take leave after childbirth. In Iceland, there has been a steady increase in fathers' involvement in care during the past 20 years which has reached the point of the majority of parents sharing care equally (Arnalds et al., 2013). This increase in shared caring creates societal expectations towards fathers' engagement in care. In Spain, however, there still probably exists more variability in types of fathers. In this regard, (Holter,

2007) points out that while some Spanish fathers wish to be fully involved, others' involvement stems from their partners' employment status, requiring them to participate in care.

Not surprisingly, the study also revealed that Icelandic fathers were more engaged in care than fathers in Spain. The greater engagement of Icelandic fathers is probably due to the fact that Iceland has equal quota rights for both parents and the length of the fathers' quota exceeds the Spanish one. A study by Garcia-Mainar, Molina, and Montvenga (2011) shows that the gender gap in parents' care for children is higher in Spain than elsewhere in Europe. Spanish society has however undergone great changes in the past decades with social policy reforms emphasizing fathers as caregivers and mothers as breadwinners (Escobedo & Wall, 2015; Moreno Mínguez, 2015; Valiente, 2010). Still, the fathers' quota has been much shorter than the one for mothers. Given that fathers' leave use is highest in countries offering long fathers' quotas (Castro-García & Pazos-Moran, 2016), extending the length of the fathers' quota in Spain has been on the agenda. The year 2018 can be considered a milestone, as that year a bill was introduced, that will gradually extend the fathers' quota to 16 weeks in five years, providing both parents with equal quota rights (PPiNA, 2018).

Lengthening the fathers' quota in Spain could help reduce work-family conflict. Increased work-family conflict perceived by fathers in Spain has been found to be affected by the lack of family support within organizations and the gender bias in reconciliation measures offered by companies (Belope-Nguema, Fernández-Cornejo, Escot, & Del Pozo-García, 2018). According to Meil, Romero-Balsas, and Rogero-Garcia (2017), a state granted right to paternity leave, is the most effective measure to support both parents in reconciling work and family, even in a male-breadwinner country like Spain.

In sum, if parents are to find a balance between paid and unpaid work, they must be provided with the means to do so. Although the results showed that Spanish fathers tend to be less involved in care than Icelandic fathers, in both countries fathers' leave use is positively associated with fathers' involvement in care both directly and also indirectly through the reduction in working hours. It therefore seems safe to conclude that fathers' use of leave after childbirth is a powerful factor influencing the way parents arrange paid work and care as their child grows older.

Appendix

Table 4. 6. Spearman correlations between the explanatory variables and the dependent variable Fathers' involvement in care

		1	2	3	4	5	6	7	8	9	10
1. Father's involvement	Iceland	1.00									
	Spain	1.00									
2. Father's leave length	Iceland	0.14 **	1.00								
	Spain	0.08	1.00								
3. Mother's leave length	Iceland	0.09 *	0.02	1.00							
	Spain	0.01	0.07	1.00							
4. Father's working week	Iceland	-0.20 **	-0.09 *	-0.07	1.00						
	Spain	-0.16 **	-0.05	0.01	1.00						
5. Mother's working week	Iceland	0.08	0.03	0.04	0.07	1.00					
	Spain	0.26 **	-0.01	0.04	0.02	1.00					
6. Father's educational level	Iceland	0.26 **	0.07	-0.04	-0.16 **	0.03	1.00				
	Spain	0.13 **	0.12 **	0.20 **	0.01	0.10 *	1.00				
7. Mother's educational level	Iceland	0.24 **	0.21 **	-0.02	-0.22 **	0.13 *	0.45 **	1.00			
	Spain	0.17 **	0.11 **	0.22 **	-0.01	0.26 **	0.49 **	1.00			
8. Father is a manager or prof.	Iceland	0.30 **	0.00	-0.03	-0.08	0.12 *	0.58 **	0.30 **	1.00		
	Spain	0.12 *	0.08	0.16 **	0.02	0.09 *	0.55 **	0.40 **	1.00		
9. Mother is a manager or prof.	Iceland	0.12 *	0.20 **	-0.06	-0.04	0.11	0.40 **	0.66 **	0.36 **	1.00	
	Spain	0.13 **	0.07	0.10 *	-0.01	0.20 **	0.39 **	0.51 **	0.34 **	1.00	
10. Two or more children	Iceland	0.10 **	0.06	0.05	-0.02	-0.10 *	0.10 **	0.14 **	0.08	0.22 **	1.00
	Spain	-0.03	-0.06	0.04	-0.03	-0.02	0.15 **	0.05	0.08 *	0.04	1.00

Spearman's correlation: * $p < 0.05$; ** $p < 0.01$ (bilateral).

Note: Rank point biserial correlations are reported for associations between binary and continuous variables. Phi coefficients are reported between binary variable.

5

RECONCILIATION OF WORK AND FAMILY LIFE IN SPAIN AND GHANA: ANTICIPATION OF YOUNG ADULTS' USE OF PARENTAL LEAVE IN THE FUTURE

Abstract^{17,18,19}

The aim of our study is to measure the attitudes of young adults who do not yet have family responsibilities and who have not yet entered the labor market, with a view to anticipating the work-family conflict. In particular, we attempt to examine how the anticipation of work-family conflict affects the anticipated use of parental leave, and to know whether young people (who are potential fathers and mothers) would act equally in the future when they are presented with the possibility of using parental leave of equal duration for both parents. In particular, a fictitious situation has been created in which young people from Spain and Ghana can take up to 24 weeks of paternity or maternity leave. The Theory of Planned Behavior (TPB) is the theoretical framework that allows us to relate the intention of young people to use the reconciliation measures available in companies with their attitudes towards the idea of

¹⁷ Article in peer evaluation

¹⁸ A version of this study has been presented at the congress JIPE. Authors: Sabina Belope-Nguema, José Andrés Fernández-Cornejo, and Lorenzo Escot.

¹⁹ My contribution has consisted in developing the different stages of the process of elaboration of the article: the review of the literature, the formulation of hypotheses, the data collection and processing, and the application of the methodology of structural equation modeling.

From the beginning, the empirical chapter was designed to be an integral part of this thesis. It has been necessary the direction of my supervisors and the collaboration of other researchers from different universities to obtain the data.

actively using the family-friendly measures (FFM) in the future, the subjective norms (support from people from the immediate environment to use FFM in the future), and the perceived behavioral controls to use FFM in the future. In the last phase of the TPB, this theory allows us to associate young peoples' intention to use FFM with their anticipated use of parental leave. A survey was conducted with 928 university students from Spain and Ghana. We have used a multigroup path analysis to analyze the intention of young adults to use reconciliation measures and, in particular, young adults' future behavior with respect to their use of parental leave. Finally, the analysis has revealed that there are gender differences in the anticipated use of paternity/maternity leave and in the intention to use FFM in the future. Based on cultural differences among young males, we also conclude that the existence of paternity leave is a key tool for advancing co-responsibility in childcare. This study is relevant to decision-making on equality policies.

Keywords

Ghana, Spain, Parental leave, Family-friendly measures, Youth

5.1. Introduction

In an international context where the father figure is undergoing a transformation in his expectations and attitudes regarding childcare, provoked by the incorporation of women (and mothers) into the labor market and family public policies. It is interesting to discover the intentions shown by fathers regarding co-responsibility in the care of children, and to study the intentions of young people as has been done in this study.

Fathers are going through this transformation because in order to be a good father it is no longer enough to be the provider. They must also be fully involved in the care of children (Kaufman, 2013; O'Brien & Moss, 2010). This new profile for fathers who are more involved in care is known as "new father" or "superdad" (Abril et al., 2015; Kaufman, 2013). However, these new parents face a variety of challenges in achieving their family goals.

In our case, we have conducted a comparative study using young university students in Spain and Ghana. This allows us to capture how the new generations intend to tackle the dilemma of reconciling work and family life in two well-differentiated socio-cultural contexts. World Values Survey Wave (2016) asked the question "on the whole, do men make better business executives than women" and the answers were strongly agreed by 68.8% of Ghanaian

respondents and 14.1% of Spanish respondents. In this way, the difference between both societies is clear.

Work-family balance literature (Pasamar & Alegre, 2015) allows us to analyze the relationship between the family and the workplace. In our case, we used the work-family conflict to explain the corporate barriers encountered by fathers who wish to become involved in the care of their children (Allen & Greenhaus, 2011).

As a possible solution to the work-family conflict, companies offer the so-called family-friendly measures (FFM) as conciliation measures for their workers with family responsibilities (the most common FFM are: flexible working schedule, compressed working week, reduced working hours, teleworking, remote working). The incorporation of this conciliatory culture presents a positive trend in companies, although it is more common in large companies than in small ones (Pasamar & Alegre, 2015).

However, the lack of sensitivity on the part of companies, together with the idea that FFM are resources conceived for female staff (Burnett et al., 2013; Levine & Pittinsky, 1997), makes fathers feel excluded and their perception of work-family conflict grows. Moreover, the real difficulties in making use of FFM means that fathers have lower rates of use than mothers (Kaufman, 2018).

Faced with this situation, one may ask what fathers who wish to reconcile work and family can do. Various studies show that laws that grant parents the right to reconcile their work and family life, such as paternity leave, are effective tools for reducing the gap between the theoretical right and the real ability to use reconciliation measure (Haas & Hwang, 2007). Literature on parental leave also points to the need to place emphasis on the design of this leave to reduce any work-family conflict, and to achieve greater co-responsibility in care tasks (Arnalds et al., 2013; Castro-García & Pazos-Moran, 2016; Moss et al., 2019).

Regarding literature on anticipation of a work-family conflict, there is empirical evidence that young people are able to anticipate their future work/family (Brannen, Lewis, & Nilsen, 2002; Cinamon, 2006). One way to predict the intentions of future parents with regard to work-life balance is to analyze the professional and family aspirations and expectations of young people. Literature on the anticipation of the work-family conflict of young people includes the gender dimension, and various studies find that young women are able to anticipate the work-family conflict to a greater extent than young men (Danziger & Eden, 2007; Fernández-Cornejo, Escot, Kabubo-Mariara, et al., 2016; McKeen & Bu, 1998).

On the other hand, the Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991) allows us to link previous theories with the future behavior of potential parents. TPB is the theoretical framework that allows us to approach deliberative and planned behavior, as is the case of the intention to reconcile work and family life and the number of weeks of parental leave. According to this theory, the intentions of young people to use FFM can be explained through attitudes, subjective norms and perceived behavioral controls towards the idea of actively using FFM in the future. The intentions of young people to use FFM can serve to explain the anticipated use of parental leave by young people, together with the perceived behavioral control towards the idea of actively using FFM in the future.

Finally, taking into account all the aspects presented above, the use of a sample of potential parents allows us to analyze their intentions regarding co-responsibility in the care of children. In particular, the aim of the study is to ascertain whether potential fathers and mothers would act equally in the future when they are presented with the possibility of using parental leave of the same duration for both fathers and mothers. For our study, a fictitious situation has been created in which young people can take up to 24 weeks of paternity and maternity leave in Spain and Ghana.

5.2. Theoretical framework

5.2.1. Fatherhood: Identity and Masculinity

The attitudes of fathers towards the care of children has undergone a transformation in the last decades and is therefore referred to as a new father figure.

A classical conceptualization of paternal involvement in literature has been offered by Lamb et al. (1985, 1987). The authors propose that parental involvement be divided into three dimensions: (1) parental contact through care and games (“engagement / interaction”); parental availability to establish contact with the child (“accessibility / availability”); and making decisions concerning the development of the child (“responsibility”). An additional dimension that is implicit in the previous one is the notion that positive paternal involvement (Habib, 2012). Recently, Pleck (2010, 2012) has proposed a new conceptualization divided into five dimensions: positive engagement, warm parenting behavior, monitoring, indirect care (engaging in activities without the child), and ensuring that needs are met.

The effective participation of fathers in childcare is determined by a series of demographic and labor variables that interact with characteristics of the household, such as the division of paid and unpaid work within the couple. But fathers' social psychological characteristics, such as their identity (Goldberg, 2015) and masculinity (Dette-Hagenmeyer, Erzinger, & Reichle, 2014; Petts, Shafer, & Essig, 2018) are also important.

Stryker's identity theory (1968) is a theoretical framework that allows us to analyze parental identity based on symbolic interactionism and has been used by various authors to explain the involvement of fathers (Goldberg, 2015; Habib, 2012). In terms of this theory, the self is considered a reflection of changeable "identities" (which can be social statuses such as father, husband, worker, brother, friend, etc.) whereas individuals' identities are organized hierarchically. The order of a certain identity in this hierarchy depends on its salience ("the likelihood that an identity is invoked in a particular situation") and its psychological centrality ("the psychological importance of identities according to individuals themselves") (Goldberg, 2015). For example, Habib (2012) states that "the higher father status is in the hierarchy, the more likely role-related behavior will be enacted. In other words, the more important a man's conception of himself as a father compared to himself as, say, a worker or husband, the more likely he will behave like a father".

On the other hand, "masculinity is a cherished social identity and achieved status" (Netchaeva, Kouchaki, & Sheppard, 2015) that, from the perspective of the precarious manhood theory, is "elusive" and "tenuous"; that is, it is not inherent to man and must therefore be continually tested (Vandello & Bosson, 2013; Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008). In this sense, the gender norms that pressure men to adhere to traditional masculine roles that emphasize parental roles such as breadwinner, disciplinarian and emotional stoicism (Connell, 1995; Miller, 2011) can come into conflict when men embrace new fatherhood norms that propose new fathering roles based on being affectionate and nurturing (Hofferth & Goldscheider, 2010). According to Petts et al. (2018), although the relation between the identities shaped by masculine norms and the new fatherhood norms is not clear, "it is possible that a salient masculine identity may reduce the likelihood that men embrace the new fatherhood ideal and be associated with lower levels of involvement with children".

Another factor that may be relevant in explaining the relationship between masculinity and father involvement in care is the father's age. Young fathers tend to have more egalitarian gender attitudes and may experience less anxiety in replacing a hegemonic masculinity with a

“caring masculinity” compared to adult fathers (this is related to gender-role discrepancy strain; see Pleck, 1981, 1995; or the concept of homophobia; see McCormack & Anderson, 2014). The latter would produce more stress and violate gender norms to embrace the new paternity. For this reason, in our study we are interested in analyzing the transformation that young men are experiencing and in knowing what their attitudes towards involvement in the care of children are.

5.2.2. Work-family conflict and reconciliation: family friendly measures and parental leave

Allen and Greenhaus (2011) define work-family balance as “an overall appraisal of the extent to which individuals’ effectiveness and satisfaction in work and family roles are consistent with their life values at a given point in time”. However, the balance between work and family is not easy.

Work-family border theory (Clark, 2000, 2002) and the boundary theory (Ashforth et al., 2000) address how individuals control, bargain and cross borders between work and family spheres in order to achieve a work-family balance.

In this theoretical context, there is also a phenomenon known as “spillover” which is the effect produced by work in the sphere of the family and vice versa (Brannen, Statham, Mooney, & Brockmann, 2007; Chen, Powell, & Greenhaus, 2009; Greenhaus & Powell, 2006). The spillover can be positive (work-family enrichment) or negative (work-family conflict). Moreover, two possible interference flows can be distinguished depending on the origin: work interferes with the family (situations occurring at work that produce alterations in our family nucleus); or family interferes with work (situations occurring in the family context that affect us at work) (Cook & Minnotte, 2008).

Nowadays, literature has changed its focus to concentrate on the increase in work-family conflict that men, especially fathers, present. According to Aumann, Galinsky, and Matos (2011), in the United States, from a sample of dual-earning couples, the percentage of fathers reporting work-family conflicts rose from 35 percent in 1977 to 60 percent in 2008; in comparison, the case of mothers went from 41 to 47 percent. This is because in order to be a good father, it is no longer enough to be the provider; full involvement in childcare must be added (Kaufman, 2013; O’Brien & Moss, 2010). This new father profile highly involved in care is known as “new father” or “superdad” (Abril et al., 2015; Kaufman, 2013). However, the

desire of fathers to adhere to new paternities can create a “new father mystique” where both traditional and contemporary fathering expectations and norms encounter a conflict (Aumann et al., 2011; Davis & Greenstein, 2009; Petts et al., 2018).

Despite modern expectations for men to become carers (Adler & Lenz, 2017; Aumann et al., 2011; Kimmel, 2017), workplaces are not always sensitive to this because of an organizational culture that revolves around the idea of the ideal worker (an individual who must be available for the company and work long hours at the expense of sacrificing his personal and family life) (Rehel & Baxter, 2015).

The way out of this paradoxical situation is through the family-friendly measures (FFM) offered by companies. The most common FFM are: flexible working schedule, compressed working week, reduced working hours, teleworking...

However, the lack of sensitivity on the part of companies, together with the idea that FFM are resources designed for female staff (Burnett et al., 2013; Levine & Pittinsky, 1997), makes fathers feel excluded and their perception of work-family conflict grows. Moreover, these obstacles to making use of FFM means that fathers have lower FFM usage rates than mothers (Kaufman, 2018).

In this situation, it is worth asking what fathers who wish to reconcile work and family can do. Various studies show that the introduction of laws that grant parents the right to reconcile their work and family life, such as paternity leave, is an effective tool for reducing the gap between the theoretical right and the real ability to make use of a conciliation measure (Haas & Hwang, 2007; Meil, Romero-Balsas, & Castrillo-Bustamante, 2019).

Parental leave (including paternity leave and maternity leave) is one of the main public policies affecting working parents. At an international level, there is a reformist trend in parental leave systems in favor of the introduction of the principles of gender equality and, in particular, the incorporation of fathers as recipients of this order (Arnalds et al., 2013; Castro-García & Pazos-Moran, 2016; Fernández-Cornejo et al., 2018; Moss et al., 2019).

Pioneers in the introduction of reforms are the Nordic countries. In 1974, Sweden surprisingly introduced parental leave accessible to both parents. Two decades later, the one-month non-transferable quota system within parental leave for each parent introduced by Norway (1993) was imitated by other countries, culminating in a revolutionary “3+3+3” reform proposed by Iceland in 2001, in which the distribution of parental leave is three months, non-

transferable for the mother and the father separately, and an additional three months whose distribution depends on the parents (Arnalds et al., 2013; Brandth & Kvande, 2018; Eydal & Gíslason, 2008; Eydal & Rostgaard, 2018; Eydal & Tine, 2014).

In the case of Spain, mothers currently have 16 weeks of maternity leave while fathers have 5 weeks of paternity leave. Since paternity leave was introduced in March 2007, it has gone from the initial 2 weeks to 4 weeks in 2017 and 5 weeks in 2018 (a process that has been affected by the economic crisis that began in 2007); and the current law (Royal Decree-Law-6/2019) increased this to 8 weeks from April 2019 and states that within a period of less than two years (January 2021) there will be equality in parental leave, which will be characterized as being of equal duration, non-transferable and 100% paid for each parent (PPiNA, 2019).

This political context is not found in Ghanaian society where fathers do not have paid paternity leave. In Ghana, only working women are entitled to 12 weeks of maternity leave with full pay (Dun-Dery & Laar, 2016). For this reason, our study is a unique case where we compare a more traditional society such as Ghana, with Spanish society that is more advanced in equality policies.

5.2.3. Youth anticipated work-family conflict and stereotypes

Regarding literature on anticipation of work-family conflict, there is extensive empirical evidence that young people are able to anticipate their future conflict (Brannen et al., 2002; Cinamon, 2006; Danziger & Eden, 2007; Fernández-Cornejo et al., 2016; McKeen & Bu, 1998). The study of anticipated work-family conflict is carried out by analyzing the professional and family aspirations and expectations of young people. By introducing the gender dimension into these studies, many have concluded that young women are better able to anticipate work-family conflict than young men. In fact, Vandello, Hettinger, Bosson, and Siddiqi (2013) in their study with a sample of young university students, observed that although both sexes equally valued achieving a balance between work and family life, women were more likely to use reconciliation measures in their careers.

However, these professional and family expectations generated by young people may be affected by the gender stereotypes that define men and women in society. According to the Social role theory (Eagly, 1987; Eagly & Karau, 2002; Eagly & Wood, 2016) the differences between men and women can be explained by the social inequalities between them (gender roles, power disparity...). Thus, following this theoretical framework, if men are expected to be

assertive (and not modest or weak at all), and women are expected to have warm, pleasant and kind (and not dominant or assertive) qualities in the workplace, these stereotypes could affect the assessment of individuals in their jobs. Prescriptive stereotypes (consensual expectations about what a group ought to do in a society) can produce biases. For example, a director's position, characterized by prescriptive masculine stereotypes, and a childcare worker position, characterized by prescriptive feminine stereotypes, can provoke double standards depending on the gender of the person being evaluated. For that reason, there is a tendency to attribute greater abilities to men for leadership and to consider that women are more capable of carrying out activities that require skills in matters of upbringing, education and care of third parties.

As can be seen in the analysis of the anticipation of the work-family conflict of young people, a natural extension is to incorporate the gender dimension. In our case, taking into account the emergence of new fatherhoods more involved in childcare and more egalitarian gender attitudes predominant in the new generations, we could ask ourselves (in terms of reconciliation of work and family life): are there gender differences in the intention of young people to use FFM in the future? Is it the same in their anticipation of the use of parental leave?

5.2.4. The Theory of Planned Behavior

Since Allport (1935, p. 798) asserted that attitude is “the most distinctive and indispensable concept in contemporary American social psychology”, the study of attitudes has come to be considered as a central nucleus of social psychology.

Maio and Haddock (2010) define attitude as “an overall evaluation of an object that is based on cognitive, affective, and behavioral information”. From this definition it can be deduced that attitudes are based on beliefs, feelings and behaviors. At the same time, reporting an attitude can be understood as the process of making a decision about an object or person, and the final evaluation of the object or person can move in a range between positive-negative, liking-disliking, favoring-disfavoring, or approving-disapproving (see also Eagly & Chaiken, 1993; Maio & Haddock, 2010).

In contrast to the simple conceptualization of attitude (motivation of the Multicomponent Model of Attitude proposed by Zanna and Rempel (1988)), other authors focus on the study of the relationship between attitude and behavior. Fishbein and Ajzen (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010) propose the theory of reasoned action to explain when attitudes predict behavior. In this theory, the authors propose a model for predicting behavior

and state that it is predicted by (behavioral) intentions, and these intentions are determined by attitudes and subjective norms. It is important to note that this model serves to predict deliberative and planned behavior. On the other hand, to explain both attitude and subjective norm components, we must first introduce the expectancy-value theory proposed by these same authors (Fishbein & Ajzen, 1975).

The expectancy-value theory (Fishbein & Ajzen, 1975) describes the method of calculation of an attitude: sum of the products between expectancy and value. Here the expectations are beliefs that individuals have regarding a certain object (it can also be understood as a subjective probability whose range is between 0 and 1); and values are evaluations that individuals make of the attributes of an object or action, which can be negative or positive.

Returning again to the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010), the first component of the model, attitude, refers to the attitude that an individual shows towards a certain behavior. In our study, a person's attitude towards a certain behavior like (the idea of) actively using the family-friendly benefits offered by companies in the future can be good or bad, motivating or not motivating, etc. The second component, the subjective norm, is related to the beliefs that an individual has about how important it is perceived in his environment (family, friends...) that a certain behavior is carried out. In our study, parents, friends, classmates or co-workers' opinions can influence an individual's use of the family-friendly benefits offered by companies. Moreover, by applying the expectancy-value theory to the components of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010), the product between behavioral beliefs (expectancy) and evaluation of the attributes (value) determines the attitude towards the behavior. The subjective norm is the result of multiplying normative beliefs (expectancy) and motivation to comply (value). It can be observed that the expectancy-value theory provides an alternative method for measuring a social construct that can also be measured directly (Fishbein & Ajzen, 1975).

In the review of the theory of reasoned action (Ajzen, 1991; Ajzen & Madden, 1986), the authors value that in order to predict behavior one must also take into account an individual's perception of his or her abilities to develop this behavior. The belief of having the necessary skills to carry out a certain action satisfactorily is what is called self-efficacy (Bandura, 1977). Ajzen (1991, 2002) adds this construct by renaming it perceived behavioral control (PBC); and this new extended model is known as the theory of planned behavior (widely

used by researchers in the field of social sciences (Evers & Sieverding, 2015; Lee, 2009)). According to this theory, PBC can influence: firstly, our (behavioral) intentions, and secondly, our behavior. Moreover, following the expectancy-value theory, PBC is determined by the product of control beliefs (expectancy) and perceived control power (value).

In summary, TPB (Ajzen, 1985, 1991) is the theoretical framework that allows us to address deliberative and planned behavior, as is the case with the intentions of reconciling work and family life and the number of weeks of parental leave for young people. According to this theory, the intentions of young people to reconcile work and family through the use of FFM can be explained by means of attitudes, subjective norms and perceived behavioral controls towards the idea of actively using FFM in the future. In addition, these intentions and the perceived behavioral control towards the idea of actively using FFM in the future can serve to explain the anticipated use of parental leave by young people.

In this article, we are going to construct four instruments in order to introduce some components of the TPB: “Attitude” (attitude towards the idea of actively using FFM in the future); “Subjective Norm” (people’s opinions about using FFM); “PBC” (perceived behavioral control to use FFM); and “Intention to use FFM”. Another two instruments are going to be introduced in order to explain self-efficacy in childcare: “Self-efficacy in child development” and “Self-efficacy in child play”.

5.3. Model and hypotheses

5.3.1. Hypothesized model

The purpose of the model is to show that, according to the review literature, the intention of young adults to make use of conciliation measures in the future directly increases the number of weeks that would be taken during their parental leave. Indirectly, youth attitude, subjective norm, and perceived behavioral control towards the idea of actively using FFM in the future may indirectly increase the number of weeks that would be taken during their parental leave, through their intention to use FFM. In addition, youth perceived behavioral control towards the idea of actively using FFM in the future is positively associated with the length of their anticipated parental leave. Youth self-efficacy in childcare (measured in terms of “development” and “play” activities) is positively associated with their intention to use FFM.

In Figure 5.1, we presented our hypothesized model. The dependent variable is “Anticipated leave length”. This variable is explained mainly by the variable “Intention to use FFM”, which in turn is the mediating variable of the model and has a positive direct effect on anticipated leave length. In this sense, the rest of the independent variables positively influence anticipated leave length through intention to use FFM. That is, the variable “Attitude” (which measures youth attitude towards the idea of actively using FFM in the future) has a positive direct effect on intention to use FFM and a positive indirect effect on “Anticipated leave length” through the mediator variable “Intention to use FFM”. The variable “Subjective norm” (which measures the support young people receive from their environment—parents, friends, classmates or co-workers—to use FFM) has a positive direct effect on intention to use FFM and a positive indirect effect on “Anticipated leave length” through the mediator variable “Intention to use FFM”. The variable “PBC” (which measures youth perception of its capabilities to develop their intentions to use FFM) has a positive direct effect on “Anticipated leave length” and a positive indirect effect on “Anticipated leave length” through the mediator variable “Intention to use FFM”. We also consider that the variable “Self-efficacy in child development” has a positive direct effect on Intention to use FFM and the variable “Self-efficacy in child play” has a positive direct effect on Intention to use FFM.

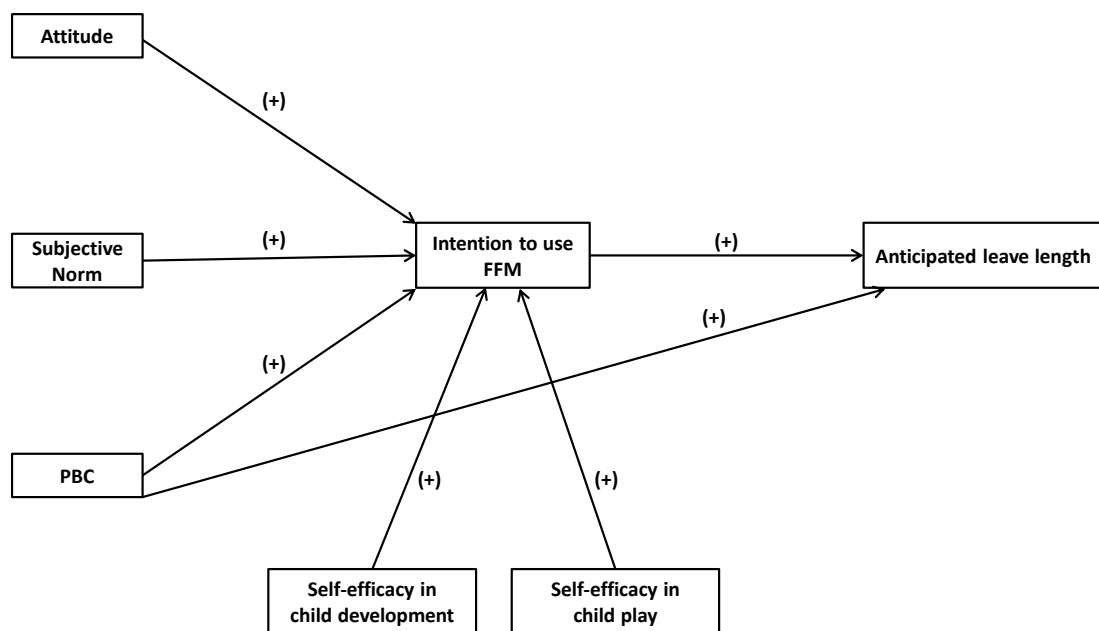


Figure 5. 1. Hypothesized model of the determinants of anticipated leave length.

5.3.2. Contrasting hypotheses

Hypothesis 1. In spite of general advances in the creation of gender-neutral care policies, female university students still have (on average) a greater willingness to take longer parental leave than male university students do in the future.

Hypothesis 2. In spite of general advances in the incorporation of inclusive family-friendly measures (for mothers and fathers) in companies, female university students still have (on average) a greater intention to use FFM than male university students do in the future.

Hypothesis 3a. There are gender differences in attitudes or beliefs towards the idea of actively using FFM between female and male students. Following TPB (Ajzen, 1985, 1991), these can be separated into three: attitude, subjective norm and perceived behavioral control.

Hypothesis 3b. There are gender differences in the perception of young people to carry out care tasks satisfactorily (measures with two indicators: self-efficacy in child development and self-efficacy in child play) between female and male students.

Hypothesis 4. The attitudes or beliefs (divided into: attitude, subjective norm, PBC) towards the idea of actively using FFM in the future and the self-efficacy in childcare (divided into: self-efficacy in child development and self-efficacy in child play) are the determining factors of the intention to use FFM in the future and have greater predictive capacity in males than in females.

Hypothesis 4a. Having strong attitudes or beliefs (divided into: attitude, subjective norm, PBC) towards the idea of actively using FFM in the future is positively associated with the intention to do so.

Hypothesis 4b. Having high self-efficacy in childcare (divided into: self-efficacy in child development and self-efficacy in child play) is positively associated with the intention to use FFM in the future.

Hypothesis 4c. Moreover, the perception of young people's control regarding the use of reconciliation measures (PBC) can also positively influence the future use of parental leave by young people.

Hypothesis 5. The intention to use FFM in the future positively influences the anticipated use of parental leave. The intention to use FFM is a mediating variable in the indirect effects of attitudes or beliefs (variables: attitude, subjective norm, and PBC) towards the idea

of actively using FFM and self-efficacy in childcare (divided into: self-efficacy in child development and self-efficacy in child play) on the Anticipated leave length.

Hypothesis 6. In a traditional society like Ghana (with less egalitarian gender attitudes), a greater intensity with which gender differences are manifested compared with Spain is expected to be seen.

5.4. Method

5.4.1. Database

Data was collected from 928 university students (541 men, 387 women) who attended: University of Cape Coast, Ghana (sample = 498); Complutense University of Madrid and ESIC Business & Marketing School, both located in Spain (sample = 430). In each separate institution, the sampling was performed during the period October 2016 to June 2017. Most of the participants were studying for their bachelor's degree (841) in the field of Business Administration or Economics (731), and the rest in other areas of Social Sciences (197). The percentages of immigrant and foreign students were higher in Spain than Ghana (0% and 7.8%; 1% and 9.2%, respectively). The average age of the students of our sample was 23.7 years in Ghana and 21.8 years in Spain. Most of the participants did not yet have children (911). Finally, for the study, we retained a complete sample of 923 students.

5.4.2. Procedure

The students who participated in the study filled out the demographic attitudinal questionnaire. The questionnaires were distributed in classrooms.

The questionnaire consists of several questions related to sociodemographic aspects, family background, gender and parenting attitudes of respondents. These questions can be grouped into three blocks: First, a block of questions related to beliefs and attitudes towards using family-friendly benefits at work. According to Ajzen (2002a), different types of indicators can be created. For example, in order to measure attitude towards the idea of actively using FFM in the future, a direct question can be formulated (or a group of direct questions). Another option is to use the product between the question to assess the behavioral belief and

the one to assess the evaluation of the attribute (or a pair of questions) to determine attitude towards a behavior measured using the 7-point Likert scale ranging from 1 to 7.

Second, a block questioning abilities to develop different childcare activities (based partly on Prasopkittikun, Tilokskulchai, Sinsuksai, & Sitthimongkol, 2006), using a scale of 0-100 (where 0 = “Cannot do at all” and 100 = “Highly certain can do”). Then, questions related to future parenting actions regarding family / work policies are also asked.

Third, the last one presents questions related to the socio-demographic aspects, family background, and gender attitudes of respondents.

5.4.3. Dependent variable

In the quantitative analysis that will be developed later, the dependent variable will be “Anticipated leave length”.

Anticipated leave length

As already mentioned in the literature review, the international panorama of parental leave focuses on a radical issue, that is the duration of maternity and paternity leave, and the consensus in this regard is to aim for the equalization of both types (Castro-García & Pazos-Moran, 2016; Moss et al., 2019). In this sense, when simulating a situation that will take place in the near future of the respondents, they were asked to imagine that in the future they were in the following situation: (1) you are developing a highly successful career with important future professional prospects; (2) your first child is born; (3) in your country (Spain / Ghana), at that time, you have the right to 24 weeks (six months) of paid parental leave (maternity or paternity leave). Then the respondent was asked “How many weeks of leave would you take?” On a scale of one to twenty-four, we considered this variable to be a proxy of a future behavior.

5.4.4. Independent variables

There are six main explanatory variables and several control variables. The main explanatory variables can be divided into two groups: a first group formed by four variables created based on the TPB (“Intent to use FFM”, “Attitude”, “Subjective Norm”, and “PBC”), and a second group formed by two variables of self-efficacy in childcare activities (“Self-

efficacy in child development” and “Self-efficacy in child play”, based partly on Prasopkittikun, Tilokskulchai, Sinsuksai, & Sitthimongkol, 2006).

Intention to use FFM is a measure consisting of four items that were designed to assess intentions to actively use family-friendly benefits offered by companies. Participants were asked to evaluate four statements (“I have the intention of actively using the family-friendly benefits in order to satisfy the caring needs of my baby”, “I have the intention of requesting a reduction in working hours in order to satisfy the caring needs of my baby”, “I have the intention of requesting a flexible work schedule in order to satisfy the caring needs of my baby”, and “I have the intention of requesting a long enough maternity/paternity leave in order to satisfy the caring needs of my baby”) on a seven-point strongly disagree-strongly agree scale (Cronbach’s $\alpha = 0.830$).

Attitude was evaluated with the statement: “For me the idea of actively using in the future the family-friendly benefits offered by companies is something...”, which was rated on a series of four seven-point evaluative semantic differential scales with the following end points: extremely bad-extremely good; not motivating at all-extremely motivating; not attractive at all-extremely attractive; and extremely unsatisfactory-extremely satisfactory. The mean score across the four items was used as a direct measure of attitude towards using in the future the family-friendly benefits offered by companies (Cronbach’s $\alpha = 0.856$).

A subjective norm is a measure consisting of five items based on the expectancy-value theory proposed by Fishbein and Ajzen (1975). To construct it, we identified five normative referents of relevance: parents/guardians, friends, classmates, people of the current or future workplace, and partner (current or future). With respect to each of these five referents, two items assessed normative belief strength and motivation to comply. For example, the statement, “To what extent would my parents/guardians approve or disapprove if I made active use of the family-friendly benefits offered by companies?”, was rated on a seven-point scale (they would totally disapprove / they would totally approve scale) to produce a measure of normative belief strength. To assess motivation to comply, participants rated the question “Generally speaking, how much do you care what your parents/guardians think you should do?” on a seven-point scale (not at all/very much). The products of normative belief strength and motivation to comply were added together across the five referents and divided by five to obtain a (belief-based) estimate of a subjective norm (Cronbach’s $\alpha = 0.776$).

PBC was developed from four questions to assess perceived behavioral control. Participants were asked to evaluate four statements (“I believe that my future work obligations will considerably limit the opportunities I will have for actively using the family-friendly benefits offered by my company”—reverse, “I believe that because of the drop in my earnings that this would imply, I will not be able to use some family-friendly benefits, such as shorter working hours”—reverse, “I believe that because my co-workers will resent me for it, I will not be able to engage in some family-friendly benefits, such as long enough maternity/paternity leave”—reverse, and “I believe that because my bosses will resent me for it, I will not be able to engage in some family-friendly benefits, such as long enough maternity/paternity leave”—reverse) on a 7-point strongly disagree-strongly agree scale (Cronbach’s $\alpha = 0.716$).

We have obtained a group of factors through a factorial analysis related to self-efficacy in childcare, and we have kept the two that have resulted in influencing the reconciliation intentions of young people, which are “Self-efficacy in child development” and “Self-efficacy in child play”.

Self-efficacy in child development is an indicator that includes nine items: “Tell what my baby likes or dislikes”, “Show affection to my baby every day and several times a day”, “Tell what my baby’s different cries mean”, “Tell what my baby can do at this age”, “Speak to and make eye-to-eye contact with my baby during feeding”, “Get my baby to smile or laugh”, “Read my baby’s gesture of what he/she wants or needs”, “Create a strong emotional bond with my baby, so that he/she feels safe and confident when he’s/she’s with me”, and “Transmit tranquility and security to him/her when he/she cries” (Cronbach’s $\alpha = 0.900$).

Self-efficacy in child play is a measure obtained by a factor analysis and formed by two items: “Play with my baby every day even if I am very busy”, and “Play with my baby every day even if I am very tired” (Cronbach’s $\alpha = 0.852$).

The following five control variables were also considered: “Business administration” (participant is studying Business Administration) is a dichotomous variable (1 = Business Administration; 0 = Others); “Career ambition” (participant degree of career ambition; on a scale from zero to ten, where “0 = very unambitious” and “10 = very ambitious”); “Father’s involvement in childcare” (degree of participant’s father in childcare during his/her childhood; on a scale from zero to ten, where “0 = traditional fatherhood” and “10 = very advanced fatherhood”); “Mother working full-time” (participant’s mother’s labor situation during most of his/her childhood is a dichotomous variable where “1 = mother was working full-time” and

“0 = mother was not working full-time”); and “Mother self-employed or an entrepreneur” (a dichotomous variable where “1 = participant’s mother was self-employed or an entrepreneur” and “0 = participant’s mother was not self-employed or an entrepreneur”). These five variables have a statistically significant effect on at least one of the two endogenous variables of the model.

5.4.5. Empirical strategy

The analysis was carried out in two steps. First, we will carry out a descriptive analysis in order to detect gender and cultural differences. Second, a model of multi-group structural equations was developed to determine the future behavior of the use of parental leave. This behavior is considered to be directly influenced by the variable that measures the intention to use the reconciliation measures available in companies (and this is the mediating variable of our model).

5.5. Results

5.5.1. Descriptive statistics

In Table 5.1, we show the average scores of the indicators and variables for the male and female students, and for each of the two countries analyzed.

The variable “Anticipated leave length” and the indicator “Intention to use FFM” present lower values for male students than for female students. For example, in the case of students from Ghana and Spain, the effect sizes for “Anticipated leave length” were .46 and .73, respectively and the effect sizes for “Intention to use FFM” were .30 and .45, respectively (confirming hypotheses 1 and 2).

For the block of indicators that we use to measure the reconciliation between work and family (attitude, subjective norm, and PBC), we found significant differences between genders in the majority of cases. However, gender differences were not obtained in the indicator “Subjective norm” in Ghana, or in the indicator “PBC” in Spain (hypothesis 3a partially confirmed).

Other noticeable gender differences were obtained in “Self-efficacy in child development” between the students from Ghana and Spain, particularly meaningful in Ghana (where the effect size is .71 and is the highest between the students from Ghana). The indicator “Self-efficacy in child play” was higher and statistically significant for females rather than males only in the case of students from Ghana (hypothesis 3b confirmed in Ghana and partially in Spain).

On the other hand, some cultural differences between the mean scores were obtained in both universities. Of particular significance are the indicators of “Attitude”, “Self-efficacy in child development”, and “Self-efficacy in child play”.

As for the correlations (Spearman’s correlation) among the different indicators, in Tables 5.2 and 5.3 a comparison is made of those obtained for the subsamples of female and male students. For example, between “Anticipated leave length” and “Intention to use FFM” there is a highly positive correlation, both for females ($rs = .377; p = .000$) and males ($rs = .335; p = .000$). Also, the intention to use FFM is positively associated with the five explanatory variables (attitude, subjective norm, perceived behavioral control, self-efficacy in child development, and self-efficacy in child play).

Table 5. 1. Descriptive statistics

	Ghana								Spain							
	Female				Male				Female				Male			
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>d</i>		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>d</i>	
1. Anticipated leave length	192	16.91	7.00	305	13.51	7.35	.46	***	190	18.03	5.94	231	13.49	6.67	.73	***
2. Intention to use FFM	192	5.35	1.16	305	4.94	1.28	.30	***	191	5.45	1.10	231	4.92	1.24	.45	***
3. Attitude †††	192	5.67	1.07	305	5.39	1.18	.24	**	183	6.02	0.88	225	5.62	1.09	.41	***
4. Subjective Norm	192	25.15	8.35	305	24.96	8.76	.03		190	26.31	6.80	232	24.14	7.19	.25	**
5. PBC	191	4.09	1.19	304	3.80	1.17	.25	**	192	3.97	1.18	230	3.74	1.15	.19	
6. Self-efficacy in child development †††	191	82.21	14.25	305	72.28	15.81	.71	***	190	82.98	13.00	233	78.00	13.30	.47	***
7. Self-efficacy in child play †††	191	61.97	21.77	305	55.15	23.50	.30	***	193	72.28	20.88	233	71.95	17.90	.05	
8. Business administration †††	192	0.82	0.39	305	0.70	0.46	.12	**	193	0.32	0.47	233	0.42	0.49	-.10	*
9. Career ambition ††	192	8.24	1.81	305	8.43	1.68	.10		192	7.97	1.53	231	8.47	1.18	.33	***
10. Father's involvement in childcare	192	6.31	2.57	305	5.77	2.71	.18	*	190	6.29	2.71	227	6.05	2.51	.12	
11. Mother working full-time ††	191	0.39	0.49	304	0.30	0.46	.09	*	192	0.45	0.50	229	0.44	0.50	.01	
12. Mother self-employed or entrepreneur †††	192	0.60	0.49	304	0.54	0.50	.04		191	0.15	0.35	227	0.15	0.36	.00	

Notes: Mann–Whitney U test for differences in the distributions of women and men. P-values: * $p < .05$; ** $p < .01$; *** $p < .001$.

Chi-square test between women and men for variables 8, 11 and 12. P-values: * $p < .05$; ** $p < .01$; *** $p < .001$.

Mann–Whitney U test for differences in the distributions of Ghana and Spain. P-values: † $p < .10$; †† $p < .05$; ††† $p < .01$.

Chi-square test between Ghana and Spain for variables 8, 11 and 12. P-values: † $p < .10$; †† $p < .05$; ††† $p < .01$.

Note that “d” is the effect size estimated for a Mann-Whitney non-parametric test (calculated indirectly with eta-squared); and in the same column difference between two proportions are shown for variables 8, 11 and 12.

Table 5. 2. Correlations: females

	1	2	3	4	5	6	7	8	9	10	11	12
1. Anticipated leave length	1.000											
2. Intention to use FFM	.377**	1.000										
3. Attitude	.298**	.419**	1.000									
4. Subjective Norm	.095	.320**	.263**	1.000								
5. PBC	.141**	.152**	.052	-.056	1.000							
6. Self-efficacy in child development	.219**	.370**	.218**	.164**	.187**	1.000						
7. Self-efficacy in child play	.194**	.274**	.169**	.157**	.131*	.483**	1.000					
8. Business administration (1)	-.029	-.039	-.047	.036	.059	.102*	-.021	1.000				
9. Career ambition	.009	.016	.062	.085	.022	.222**	.039	.126*	1.000			
10. Father's involvement in childcare	.133**	.118*	.029	.055	.021	.084	.200**	.056	.028	1.000		
11. Mother working full-time (2)	.027	-.057	.014	.010	-.075	-.028	-.039	-.060	.021	.023	1.000	
12. Mother self-employed or entrepreneur (3)	-.053	.019	-.094	-.045	.100	-.022	-.112*	.269**	-.018	.018	-.106*	1.000

Spearman's correlation: * $p < .05$; ** $p < .01$ (bilateral).

Note: Rank point biserial correlations are reported for associations between binary and continuous variables. Phi coefficients are reported between binary variables.

Table 5. 3. Correlations: males

	1	2	3	4	5	6	7	8	9	10	11	12
1. Anticipated leave length	1.000											
2. Intention to use FFM	.335**	1.000										
3. Attitude	.177**	.364**	1.000									
4. Subjective Norm	.156**	.491**	.330**	1.000								
5. PBC	.146**	.141**	.079	-.030	1.000							
6. Self-efficacy in child development	.174**	.372**	.234**	.260**	.111*	1.000						
7. Self-efficacy in child play	.140**	.278**	.256**	.119**	.183**	.448**	1.000					
8. Business administration (1)	.031	.063	-.018	.104*	.022	-.110*	-.098*	1.000				
9. Career ambition	-.035	-.051	.098*	.050	-.101*	.185**	.020	-.007	1.000			
10. Father's involvement in childcare	.129**	.257**	.051	.197**	.044	.178**	.159**	.088*	.028	1.000		
11. Mother working full-time (2)	.067	.039	.040	-.011	.007	.019	.088*	-.002	.005	.056	1.000	
12. Mother self-employed or entrepreneur (3)	-.044	.038	.025	.048	.028	-.067	-.098*	.156**	.107*	-.038	-.079	1.000

Notes. Spearman's correlation: * $p < .05$; ** $p < .01$ (bilateral). Note: Rank point biserial correlations are reported for associations between binary and continuous variables. Phi coefficients are reported between binary variables.

5.5.2. Multigroup path analysis

In this multigroup analysis, using Amos 22 (Arbuckle, 2013), all paths of the final model were evaluated and compared using the combinations of sex and country (Spanish-Female, Spanish-Male, Ghanaian-Female and Ghanaian-Male), and the effects of the model were considered to be moderated by these combinations.

First, we verified whether the four models were different between the combinations of sex and country. We compared the unconstrained model ($\chi^2 (32) = 39,300, p = 0.175, TLI = 0.950, RMSEA = 0.016, CFI = 0.994$ and $SRMR = 0.030$, which had an acceptable fit) and the constrained model ($\chi^2 (71) = 117,340, p < .001, TLI = 0.858, RMSEA = 0.045, CFI = 0.962$ and $SRMR = 0.050$ that should have presented a worse fit if moderation was found) and concluded that there are significant differences between the four combinations of sex and country ($\chi^2 (39) = 78,040, p < .001$).

In Figure 5.2, we highlighted that the analysis of data on university students from Ghana and Spain revealed that the model proposed based on TPB to explain young adults' intentions to use FFM in the future has greater explanatory capacity in the sample of men compared to women (R^2 for Spain: .386 and .526, for females and males, respectively; R^2 for Ghana: .299 and .333, for females and males, respectively) (confirming hypothesis 4).

In Spain, as shown in Figure 5.2, "Attitude", "Subjective norm" and PBC towards the idea of actively using FFM had positive significant effects on "Intention to use FFM in the future" in both females ($\beta = .292, p = .000; \beta = .259, p = .000; \text{and } \beta = .149, p = .010$, respectively) and males ($\beta = .359, p = .000; \beta = .300, p = .000; \text{and } \beta = .186, p = .000$, respectively). However, students' PBC towards the idea of actively using FFM was not associated with their anticipated leave length in both females ($\beta = .070, p = .292$) and males ($\beta = .085, p = .165$).

"Self-efficacy in child play" was not associated with the "Intention to use FFM in the future" in both Spanish females ($\beta = .122; p = .070$) and Spanish males ($\beta = .003; p = .956$). However, Spanish students' self-efficacy in child development had a positive significant effect on their intention to use FFM in both females ($\beta = .183; p = .007$) and males ($\beta = .178; p = .000$). All these results provide evidence in favor of hypotheses 4a and 4b, but not hypothesis 4c.

The intention of using FFM had a positive significant effect on the anticipated leave length in both Spanish females ($\beta = .395, p = .000$) and Spanish males ($\beta = .430, p = .000$).

Thus, students' attitude, subjective norm and PBC towards the idea of actively using FFM had positive indirect effects on their anticipated leave length through the mediating variable "students' intention to use FFM" in both Spanish females ($\beta = .115$, bootstrap 95% CI [.049, .200]; $\beta = .100$, bootstrap 95% CI [.045, .169]; and $\beta = .059$, bootstrap 95% CI [.013, .126], respectively) and Spanish males ($\beta = .155$, bootstrap 95% CI [.095, .226]; $\beta = .129$, bootstrap 95% CI [.075, .191]; and $\beta = .080$, bootstrap 95% CI [.039, .135], respectively) (confirming hypothesis 5).

Considering the control variables, being a female student of Business Administration had a negative significant effect on the intention to use FFM ($\beta = -.123$; $p = .038$). In the case of Spanish male students, the level of career ambition had a negative significant effect on the intention to use FFM ($\beta = -.163$; $p = .000$) and a father's involvement in childcare had a positive effect on the intention to use FFM ($\beta = .097$; $p = .039$).

In Ghana, only students' subjective norm towards the idea of actively using FFM had a significant positive effect on their intention to use FFM in both females ($\beta = .236$, $p = .000$) and males ($\beta = .366$, $p = .000$). Students' attitudes towards the idea of actively using FFM had a significant positive effect on females' intention to use FFM ($\beta = .229$, $p = .001$) but not on that of males ($\beta = .070$, $p = .172$). However, students' PBC towards the idea of actively using FFM was not associated with their intention to use it in both females ($\beta = .033$, $p = .611$) and males ($\beta = .014$, $p = .771$). PBC was not associated with females' anticipated leave length ($\beta = .105$, $p = .115$), although it did have a positive significant effect on males' anticipated leave length ($\beta = .116$, $p = .033$).

Ghanaian female students' self-efficacy in child play was not associated with their intention to use FFM ($\beta = .050$; $p = .513$). However, Ghanaian male students' self-efficacy in child play had a positive significant effect on their intention to use FFM ($\beta = .143$; $p = .011$). Moreover, Ghanaian students' self-efficacy in child development had a positive significant effect on their intention to use FFM in both females ($\beta = .238$; $p = .003$) and males ($\beta = .174$; $p = .003$). All these results provide evidence in favor of hypotheses 4b and 4c and partially 4a for Ghanaian male students; hypotheses 4a and 4b were partially confirmed but not 4c for Ghanaian female students.

The intention to use FFM had a positive significant effect on the anticipated leave length in both Ghanaian females ($\beta = .296$, $p = .000$) and Ghanaian males ($\beta = .251$, $p = .000$). Thus, students' subjective norm towards the idea of actively using FFM had a positive indirect effect

on their anticipated leave length through the mediating variable “students’ intention to use FFM” in both Ghanaian females ($\beta = .070$, bootstrap 95% CI [.019, .149]) and Ghanaian males ($\beta = .092$, bootstrap 95% CI [.048, .149]). For females, attitude towards the idea of actively using FFM also had a positive indirect effect on their anticipated leave length through their intention to use FFM ($\beta = .068$, bootstrap 95% CI [.024, .136]) (hypothesis 5 partially confirmed).

Considering the control variables for the Ghanaian sample, whether the female participants’ mother was self-employed or an entrepreneur was associated with their intention to use FFM ($\beta = .145$; $p = .019$) and being a female student of Business Administration had a positive significant effect on the anticipated leave length ($\beta = .164$; $p = .015$). In the case of male students, a father’s involvement in childcare had a positive effect on the intention to use FFM ($\beta = .131$; $p = .008$) and whether the male participant’s mother was working full time during most of their childhood was associated with their anticipated leave length ($\beta = .111$; $p = .043$).

With regard to the different models resulting from the combination of sex and country, in the multigroup analysis, the four conditions obtained by the combination of these were analyzed to evaluate whether the association was the same for each of the four conditions.

In Table 5.4, we present the multigroup model comparison between each pair of the four conditions: Spain-Female, Ghana-Female, Spain-Male and Ghana-Male. In most of the comparisons made between the group of females and males within each country, or the comparisons between Spain and Ghana within each sex, no statistically significant differences were found except for the comparison of male models in Spain and Ghana ($\chi^2 (13) = 37.244$, $p = .000$). As shown in Figures 5.3 and 5.4, when focusing on cultural differences within the group of males, we found that the effect of “Attitude” and the effect of “PBC” on the “Intention to use FFM” were higher in Spain than Ghana for the subsample of male students (critical ratio for differences: $p = .000$; $p = .012$, respectively).

Moreover, we also found statistically significant differences between the models of Spain-Female and Ghana-Male ($\chi^2 (13) = 30.797$, $p = .004$) and the models of Ghana-Female and Spain-Male ($\chi^2 (13) = 30.466$, $p = .004$). Other marginally significant differences were found: the effect of intention to use FFM on the anticipated leave length was higher in Spain than Ghana for the subsample of male students (critical ratio for differences: $p = .053$). The effect of attitude on the intention to use FFM was higher in females than males for Ghana

(critical ratio for differences: $p = .070$); and the effect of a subjective norm on the intention to use FFM was higher in females than males for Ghana (critical ratio for differences: $p = .090$). All these results provide evidence in favor of gender and cultural differences.

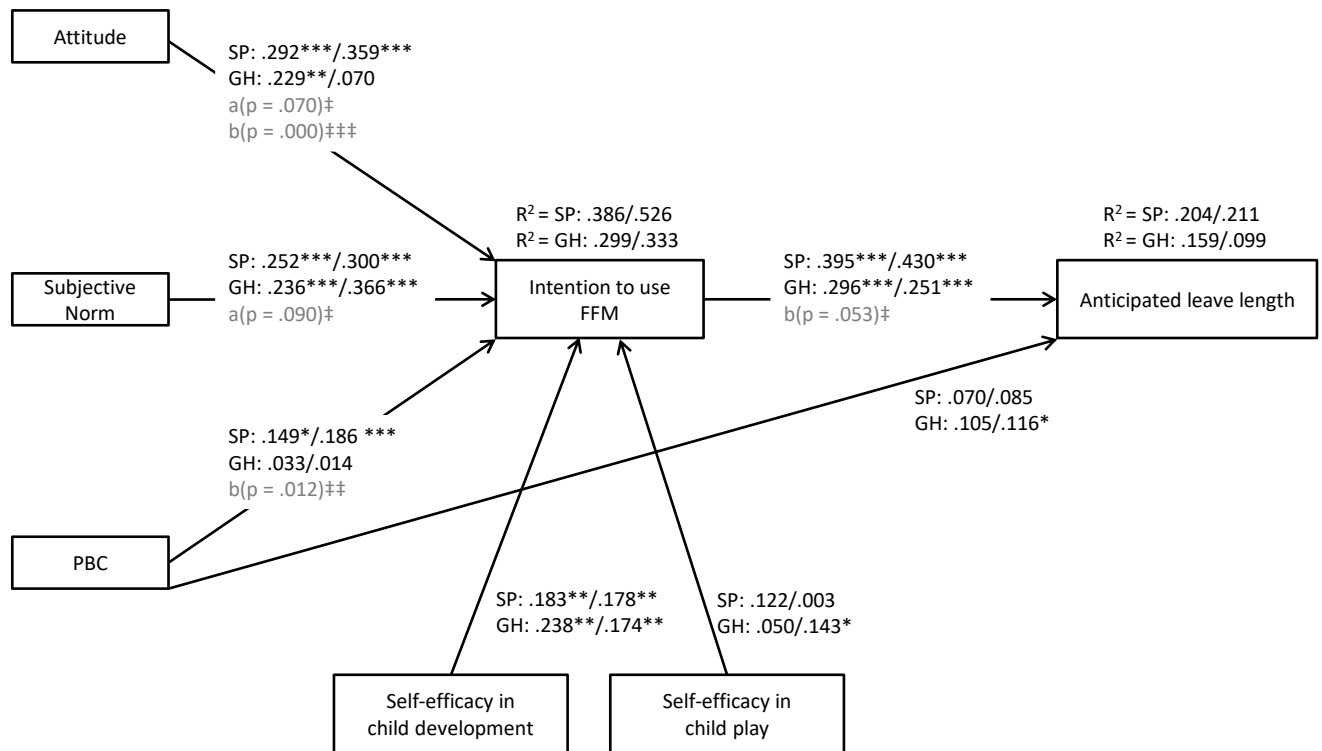


Figure 5. 2. Multigroup Path Analysis for the four combinations of Sex (female and male) and Country (Spain and Ghana).

- Note. Sp: Spain ($n = 193$ for females; $n = 233$ for males); Gh: Ghana ($n = 192$ for females; $n = 305$ for males).
- Standardized regression weights are provided for each path. On the left is the female coefficient and on the right is the male coefficient. * $p < .05$. ** $p < .01$. *** $p < .001$.
- a(): P-value for critical ratios for differences between each pair of regression weights for females and males in the Ghanaian samples are provided for each significant path. † $p < .10$. †† $p < .05$. ††† $p < .01$.
- b(): P-value for critical ratios for differences between each pair of regression weights for Spain and Ghana in the male samples are provided for each significant path. † $p < .10$. †† $p < .05$. ††† $p < .01$.
- Control variables: Business administration, Career ambition, Father's involvement in childcare, Mother working full-time, and Mother self-employed or an entrepreneur.

Table 5. 4. Multi-group model comparison between each pair of the four conditions: Spain-Female, Ghana-Female, Spain-Male and Ghana-Male

Group 1	Versus	Group 2	Model comparison	
Spain-Female	Vs	Spain-Male	$\chi^2 (13) = 13.329, p = .423$	
Ghana-Female	Vs	Ghana-Male	$\chi^2 (13) = 14.542, p = .337$	
Spain-Female	Vs	Ghana-Female	$\chi^2 (13) = 21.968, p = .056$	
Spain-Male	Vs	Ghana-Male	$\chi^2 (13) = 37.244, p = .000$	***
Spain-Female	Vs	Ghana-Male	$\chi^2 (13) = 30.797, p = .004$	**
Ghana-Female	Vs	Spain-Male	$\chi^2 (13) = 30.466, p = .004$	**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

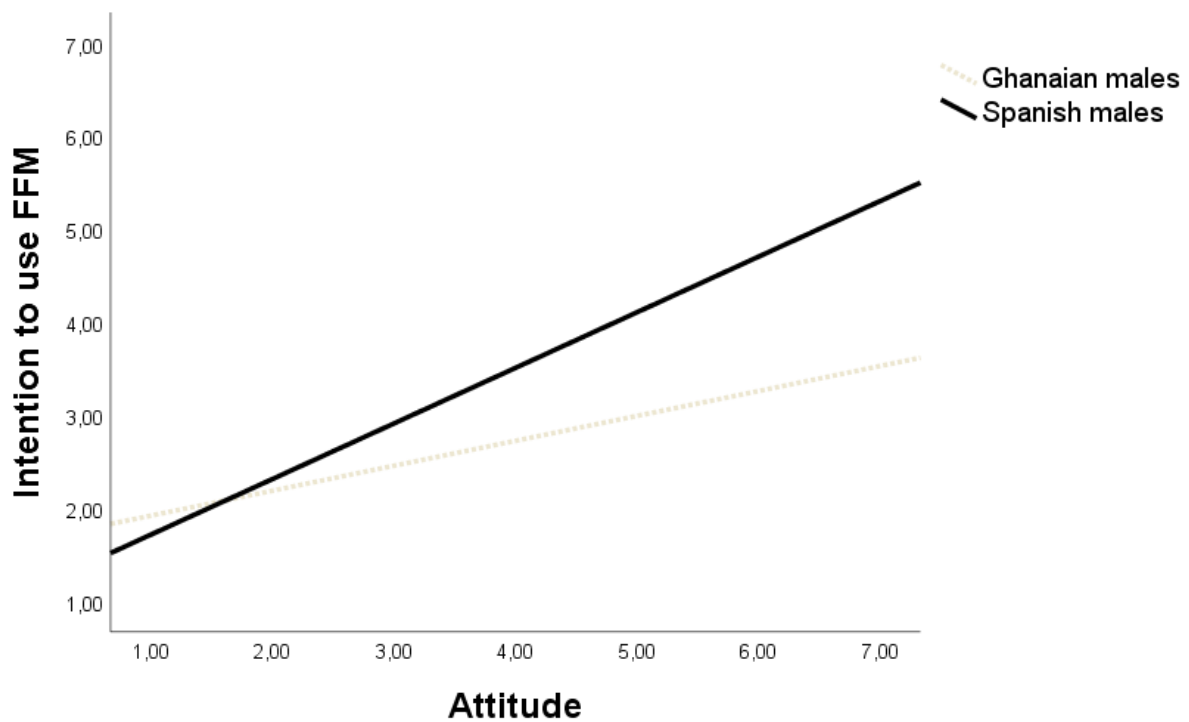


Figure 5. 3. The moderation impact of a country (Ghana and Spain) on the effect of the male attitude towards the idea of actively using FFM on the male's intention to use FFM.

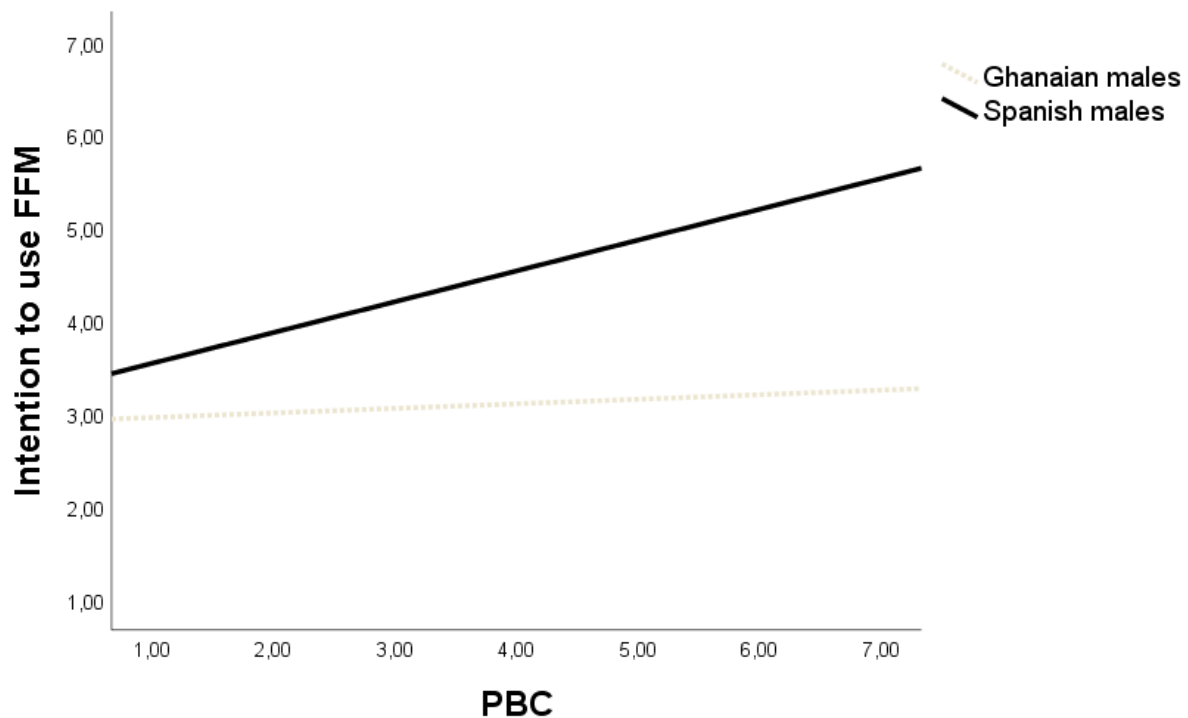


Figure 5. 4. The moderation impact of a country (Ghana and Spain) on the effect of the male perceived behavioral control (PBC) towards the idea of actively using FFM on the male's intention to use FFM.

5.6. Discussion

The aim of this article is to contribute to research on the intention shown by potential fathers regarding co-responsibility in the care of children by presenting findings on the interconnection between youth attitudes or beliefs concerning the idea of actively using FFM in the future, their future intention to use FFM and use of youth anticipated parental leave. Following TPB (Ajzen, 1985, 1991), these attitudes and beliefs can be separated into three: attitude, subjective norm and perceived behavioral control.

The article compares findings from Ghana and Spain, while quantifying gender differences in both countries using a survey of 928 university students from Spain and Ghana. This type of cross-cultural study between Ghanaian and Spanish societies, which takes into account that social norms and the legal framework that regulates parental leave are different in both countries, provides an exceptional comparison to discover how young people conceive their possibilities of reconciling work and family life based on the existing laws in this area.

Literature on anticipation of a work-family conflict provides empirical evidence that young people are able to anticipate their future work-family conflict (Brannen, Lewis, & Nilsen,

2002; Cinamon, 2006); and in that process women tend to self-limit their professional career in order to provide childcare (Danziger & Eden, 2007; Fernández-Cornejo, Escot, Kabubo-Mariara, et al., 2016; McKeen & Bu, 1998). Relating this to our study, we have raised the possibility of using parental leave of the same duration (24 weeks) for both fathers and mothers.

As a significant result, on average, Spanish students would take 18.03 weeks of maternity leave compared to 13.49 weeks of paternity leave taken by young men. In the case of Ghana, women would take 16.91 weeks of maternity leave compared to 13.51 weeks of paternity leave by men.

However, it is interesting to note that if we look at the number of weeks of leave that would be taken by young men, we observe that, on average, this is higher than the number of weeks of paternity leave available to fathers in their respective countries at the time of the study (4 weeks in Spain and 0 weeks in Ghana).

This is consistent with literature on fatherhood, where it is noted that the attitude of fathers towards childcare has undergone a transformation in recent decades leading to new father figures more involved in the care of their children (“superdad”, “new father”) (Abril et al., 2015; Kaufman, 2013). Even so, this new fatherhood can be affected by one’s own egalitarian gender attitudes and the anxiety generated by replacing a hegemonic masculinity with a “caring masculinity” (McCormack & Anderson, 2014; Pleck, 1981, 1995).

Furthermore, the findings of our study in terms of the number of weeks of paternity leave that would be taken by young men leads us to believe that it is possible that in the future there will be progress in co-responsibility in the care of children. This is due to the fact that one of the fundamental pillars of the international reforms of parental leave systems is the introduction of the principles of gender equality, the goal of which is the equalization of parental leave (Arnalds et al., 2013; Castro-García & Pazos-Moran, 2016; Fernández-Cornejo et al., 2018; Moss et al., 2019).

Generally, the best way to reduce parents’ participation in the labor market to care for their children is to use reconciliation measures. In our study, women are more likely to use reconciliation measures in the future than men. This could mean a lower labor market participation of potential mothers compared to potential fathers. This finding is consistent with similar studies of university students (Vandello, Hettinger, Bosson, & Siddiqi, 2013).

It is worth highlighting four additional aspects discussed below. First, the results show that subjective norms can influence young people's intention to use reconciliation measures in the future. This is consistent with the literature of Expectancy Theory Value (Eccles et al., 1993; Eccles, 2015) applied to explain gender differences in professional careers. Eccles proposes that the opinions of parents, teachers or tutors should influence the preferences of young people to study STEM. In her results, she observes that boys tend to be more often recommended to study for careers in science (such as engineering, physics). Thus, we have considered in our study that the opinions of relatives, friends or colleagues can shape the subjective norms that young people have on the reconciliation of work and family life; and these explain the greater predisposition of girls to take measures to reconcile work and family life, such as the reduction of working hours, requesting flexible hours, etc.

Second, in our study we can see that women's and men's attitudes towards the use of FFM are different. These gender differences in young people's attitudes towards reconciliation may be due to gender norms and the anticipation of a work-family conflict. In the traditional family model, the mother has the role of caregiver. The fact that young women tend to anticipate the work-family conflict to a greater extent than young men can explain the greater motivation in the attitude that young women have towards the use of reconciliation measures in comparison with young men.

Third, Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991) is used firstly to explain young people's future intention to use FFM and later to explain their anticipated leave length. The analysis of a sample of university students from Ghana and Spain revealed that the model proposed based on TPB can be considered to have greater explanatory capacity in the sample of males than in females. Possibly this is because young males see conciliation as an option, while young females may be pressured by social norms and see it as an obligation (this can be explained by the Social role theory (Eagly, 1987; Eagly & Karau, 2002; Eagly & Wood, 2016)). Moreover, since care stereotypes are traditionally associated with female stereotypes, men may feel less able and unsure to apply for the reconciliation measures available in the company. On the contrary, these same female stereotypes consider that women are more able to carry out the activities of caring for a baby and find themselves in a favorable environment when they ask to reconcile their work and family life. However, there may be an inconsistency between prescriptive stereotypes and their own work and family aspirations. Thus, if you are a man and want to advance in your professional career, you can be negatively evaluated if you make use of reconciliation measures; whereas, if you are a woman and want to advance in your

professional career, you can be perceived as a “cold” mother if you do not make use of reconciliation measures (this is also part of the Role congruity theory, which is a derivation of the Social role theory (Eagly & Karau, 2002)).

Fourth, the country of residence of our participants had some explanatory capacity. On the one hand, we observe, in general, more intense gender differences among students in Ghana than among those in Spain. On the other hand, the analysis of a sample of university students from Ghana and Spain revealed that the model proposed based on TPB (Ajzen, 1985, 1991) firstly to explain youth future intention to use FFM and later to explain youth anticipated leave length can be considered different in Ghana and Spain in the sample of males. The effect of attitude and PBC towards the idea of actively using FFM on the intention to use FFM were higher in Spain than Ghana for the subsample of male students. This may be due: first, to the greater implementation of equality policies in Spain; and second, to the existence of paternity leave, which, in itself, is a public policy that helps to advance co-responsibility in the care of children.

Based on the aforementioned results, we can highlight that in a traditional society such as Ghana, it is necessary to create laws that allow fathers to reconcile their work and family life (such as paternity leave). In Spain, gender stereotypes and subjective norms continue to be important factors that allow society to become increasingly egalitarian.

In summary, when examining the behavior of future fathers and future mothers regarding the possibility of using maternity and paternity leave of equal duration for both parents, according to our study, the difference in the number of weeks chosen will continue in the future. The question is whether they will reduce the gap in the use of these leaves, and generally in the use of family-friendly measures.

We have investigated the mentality of potential parents in this study and assessed the preconceived idea they have about their work and family life. We can conclude that a person with a high predisposition to reconcile family and professional life would be stimulated by the existence of laws that support their desire to reconcile, such as, for example, paternity leave and maternity leave.

The novelty of our study is that young men welcome the hypothetical extension of paternity leave in the case of Spain, or the hypothetical existence of paternity leave in the case of Ghana. This leads us to deduce that they are predisposed to equality if they are supported by

laws and even by business culture and society. Therefore, they would also be more likely to share responsibility in the care of their children if they had such support.

Limitations

Fishbein and Ajzen (1975) propose different methods for the calculation of TPB components: attitude, subjective norm and perceived behavioral control. In our study, for the attitude and subjective norm components, we have calculated indices with the two alternatives and we have stayed with those that presented a better level of global reliability (in terms of Cronbach's alpha) and provided a better adjustment of the path analysis.

This has meant that when evaluating gender differences for the subjective norm component, we have kept the indicator calculated using the values x beliefs product, which did not present statistically significant differences between the group of males and females in the Ghana sample. However, the "Subjective norm" indicator calculated by the direct method presented statistically significant differences between the group of boys and girls in the Ghana sample (Table 5.5).

Table 5. 5. Descriptive statistics for Attitude and Subjective norm. Ghanaian students

	Female			Male			D	
	N	Mean	SD	N	Mean	SD		
Attitude (Direct)	192	5.67	1.07	305	5.39	1.18	0.24	**
Attitude (Expectancy x Value)	192	30.34	8.91	303	28.44	8.24	0.23	*
Subjective Norm (Direct)	192	5.51	1.01	305	5.26	1.07	0.24	**
Subjective Norm (Expectancy x Value)	192	25.15	8.35	305	24.96	8.76	0.03	

Notes: Mann–Whitney U test for differences in the distributions of women and men.

P-values: *p<0.05; **p<0.01; ***p<0.001

Note that "d" is the effect size estimated for Mann-Whitney non-parametric test (calculated indirectly with eta-squared).



WHETHER YOUR NAME IS MANUEL OR MARÍA MATTERS: GENDER BIASES IN RECOMMENDATIONS TO STUDY ENGINEERING

Abstract^{20,21,22}

We conducted a controlled experiment to detect gender biases that potential tutors may have when assessing the mathematical ability of teenagers or when advising them on their career choice. We presented a fictional profile of a 15-year-old person (called Manuel or María, with two possible levels of academic record) to the participants in our study (university students from Spain and Colombia) and asked them to evaluate his/her mathematical ability and advise him/her about whether or not to study engineering in the future. We considered the perception of the target's mathematical ability as a variable mediating in the effect of the target's gender on the recommendation to study engineering. Additionally, we considered some moderating variables. Our results suggest that a significant degree of gender bias persists in the attribution of mathematical ability and in the recommendation to study engineering. We derived some practice implications for counselors and for equality policies.

²⁰ Article in peer evaluation.

²¹ A version of this article has been presented at the congress JIPE. Authors: José Andrés Fernández-Cornejo, Mario Alberto De la Puente, Eva Del Pozo-García, Sabina Belope-Nguema, Eduardo Rodríguez-Juárez, and Lorenzo Escot.

²² My contribution has consisted in developing the different stages of the process of elaboration of the article: the review of the literature, the formulation of hypotheses, the data collection and processing and the application of the methodology of structural equation modeling.

From the beginning, the empirical chapter was designed to be an integral part of this thesis. It has been necessary the direction of my supervisors and the collaboration of other authors to obtain the data.

Keywords

Career recommendations; STEM careers; engineering; gender bias; double standards

6.1. Introduction

Overall, women remain under-represented in engineering and technology. In Spain, they represented 23% of the engineering and technology research staff of public universities in 2015 (MEIC, 2016). In Colombia, women represented 25% of all researchers in engineering and technology (UNESCO, 2018).

These figures are consistent with low female enrollment rates in courses in this field. For example, in Spain women represented 21.2% of the total number of students enrolled in mechanical engineering in the 2016-2017 academic year, and 11.9% of those enrolled in computer engineering (MECD, 2018). In Colombia, in 2017 women accounted for 26% of all those enrolled in engineering studies (SNIES, 2018).

Research shows that the disadvantage faced by girls in technological STEM is the result of the interaction of a range of factors embedded in both the socialization and learning processes. As expectancy-value theory (Eccles et al., 1983) and ecological framework (Bronfenbrenner, 1979) suggest, these include social, cultural and gender norms which influence the way girls and boys are brought up, learn and interact with parents, family, friends, teachers and the wider community, and which shape their identity, beliefs, behavior and choices (UNESCO, 2017). On the other hand, mathematical ability is considered a prerequisite for students wanting to enroll for technological courses (Sáinz & Eccles, 2012), in a context in which math-gender stereotypes that disadvantage girls persist (Cheryan, 2012; Shapiro & Williams, 2012; UNESCO, 2017).

The beliefs and expectations of parents, teachers and other tutors can have an important effect on mathematics self-concept and on the career choice of girls and boys (Gunderson et al., 2011). However, the beliefs, attitudes and expectations of parents and tutors are themselves influenced by gender stereotypes or, in the words of Charles and Bradley (2009), by “the enduring cultural force of gender-essentialist ideology (i.e., cultural beliefs in fundamental and innate gender differences)”.

In this research, following the “double standards” approach (Correll & Ridgeway, 2003; Foschi, 2000), we focus specifically on the detection of possible biases (derived from the

existence of these stereotypes) that tutors (parents, teachers, school counselors, older siblings, etc.) may have when assessing the mathematical ability of teenagers or when advising them on their career choice. Indeed, our study has three research aims: first, to capture and quantify experimentally the bias (exerted by potential tutors) in favor of a young male target (compared to a young female target) in the attribution of mathematical ability. Second, to detect and quantify the gender bias (in favor of the male target) in the recommendation to study engineering. And third, to determine to what extent this last bias is related to the bias in the attribution of mathematical ability.

For this purpose, we conducted a controlled experiment to directly detect these biases. We presented a fictional profile of a 15-year-old person to the participants in our study (university students from Spain and Colombia who were asked to act as if they were tutors or counselors of this teenager) and asked them to evaluate his/her mathematical ability (compared to verbal expression and communication) and advise him/her about whether or not to study engineering in the future. Our design was a 2x2 factorial where factor 1 was the gender of the target (male, female) and factor 2 was the level of the academic record of the target (intermediate, high).

After a random assignment of the participants to each of the four resulting experimental conditions, we were able to obtain causal evidence about the biases discussed previously (the fact that the target was called Manuel or María causally influenced the evaluations and recommendations of the participants).

We consider that both the specific phenomenon to be studied and the experimental methodology used constitute a novel contribution to the literature on gender and the choice of a STEM career.

Our study also contains a cross-cultural dimension, using two samples of Spanish (Madrid) and Colombian (Barranquilla) participants. These two countries have a number of aspects in common, such as a similar population (46.5 million inhabitants in Spain, 49.0 million in Colombia, in 2017, according to World Bank (2018)), the same main language (Spanish), and certain historical and cultural affinities.

However, there are also important differences in terms of geographical location, historical evolution, economic and social development, and social, cultural and gender norms. In Colombia there is greater persistence of traditional gender norms. For example, 71.4% of Spanish respondents but only 41.0% of Colombian respondents disagreed with the statement

“If a woman earns more money than her husband, it’s almost certain to cause problems”, made by the World Values Survey (2014).

In addition, these cross-cultural differences can be intensified by comparing the specific social and cultural environment of Madrid (belonging to a central and rich region of Spain) with that of Barranquilla, belonging to the Caribbean Coast region of Colombia.

6.2. Theoretical Justification

6.2.1. Expectancy-Value Theory of Achievement and Choices and Parent and Tutor Influence

The analysis of the influence of tutors (parents, teachers, school counselors, older siblings, etc.) in the choice of courses taken by adolescents can be addressed through expectancy-value theory (EVT) (Eccles et al., 1983; Eccles, 2014). EVT is a theoretical framework that uses both psychological and socio-cultural perspectives on human development to explain human (in this case young student) choice and achievement.

According to EVT, students’ achievements and achievement-related choices are most proximally determined by two factors: expectancies for success (“Am I able to do this task?”) and subjective task values (“What value do I give to this activity?”).

Expectancies for success collect students’ beliefs about how well they will do in an upcoming task. The subjective value component can be divided into five subcomponents: interest (the enjoyment experienced when doing a task); utility value (the usefulness of a task for future goals); attainment value (the importance of doing well on a task); relative cost (opportunity cost, emotional cost, etc., of doing a task); and prior investment (prior experience and effort investment in this task).

Students’ goals and general self-schemas (personal and social identities, possible and future selves, self-concept, short and long-term goals) affect expectancies and value. The value component is also affected by the “student’s affective reactions and memories”.

However, if we take a step back in the model, these student goals and affective reactions are influenced by their perceptions and interpretations of experience. A student’s perceptions

include the perception of the beliefs, gender roles and stereotypes of the socializers (parents, teachers, school counselors, older siblings, etc.).

The above mentioned and, ultimately, the choice of course for adolescents, are influenced by a number of factors: cultural milieu, stable child characteristics, previous achievement-related experiences, and socializer beliefs and behaviors.

The EVT has a certain parallelism with the “ecological framework” (Bronfenbrenner & Evans, 2000) of factors influencing the participation, achievement and progression of girls and women in STEM studies (UNESCO, 2017), which distinguishes between multiple and overlapping factors (society, school, family and peers, and learner). In both cases, what stands out is that advice from tutors (parents, teachers, school counselors, older siblings, etc.) can play an important role in the child’s perceptions and choices.

There is a considerable literature that confirms the influence of parents and other tutors in the formation of adolescents’ attitudes to mathematics and their choice of course (Eccles et al., 1993; Eccles, 2014). According to Jodl et al. (2001) who conducted research on a sample of 444 American adolescents, parental values predicted adolescents’ occupational aspirations via both direct (parental values) and indirect (parental behavior) pathways. When adolescents perceive their parents to have high educational expectations for them, they are more likely to have higher aspirations for themselves (Davis-Kean, 2005; Sáinz & Müller, 2017). Parental social status and education are also important predictors of adolescent educational and behavioral outcomes (Boudarbat & Montmarquette, 2009; Sáinz & Müller, 2017).

6.2.2. Social Role Theory. The Origin of Stereotypes

A large body of work has shown that there is still a stereotype that associates mathematical ability (compared to verbal expression and communication) with men to a greater extent than with women (Gunderson et al., 2012). And, at the same time, the persistence of an important degree of gender segregation in the fields of study continues to be observed (Charles & Bradley, 2009). What underlies these phenomena is the persistence of a series of gender stereotypes that, logically, are also held by parents and tutors (and that they subsequently transmit to their children or wards).

Where could these essentialist beliefs of the tutors originate? According to social role theory (Eagly, 1987; Eagly & Karau, 2002), it is not so much that the differences (essential,

natural) between men and women explain the inequalities we see in the results (in power, in gender roles...), rather the opposite. The starting point is that there are inequalities that manifest themselves in the performance of different roles and, in an attempt to explain why these roles exist, we make essentialist attributions (“because men and women are different ...”). The basic principle of social role theory is that gender differences and similarities arise primarily from the distribution of men and women into social roles within their society. That means that perceivers infer that there is correspondence between the types of actions people engage in (“there are many men in engineering and technology activities”) and their inner dispositions (“so men are better engineers and mathematicians”). Thus gender stereotypes follow from the observation of people in typical social gender roles—especially, men’s occupancy of the breadwinner and higher status roles (with perceivers attributing agentic traits to them) and women’s occupancy of homemaker and lower status roles (with perceivers attributing communal traits to them).

In addition, these stereotypes, such as that regarding mathematics and language, can be explicit or implicit (Nosek et al., 2009; Smyth & Nosek, 2015). For instance, Smeding (2012) found that implicit gender-mathematics stereotypes—measured by an implicit association test—were weaker among female engineering students than female humanities students.

In the case of Spain, Sáinz et al. (2012), in qualitative research, analyzed how parents and teachers perceived ICT professionals. On the one hand, these tutors considered that gender does not condition adolescents’ study choices; but, on the other, they held several kinds of stereotypes about ICTs, some of them related to gender (for example, some teachers assumed that girls frequently had better grades because they were more hard working and responsible than their male counterparts, whereas when discussing high achieving students, the highest intellectual capabilities were assigned to boys).

Regarding the specific content of stereotypes (maintained by tutors and other socializers), there are two predominant stereotypes in relation to gender and STEM (Hill et al., 2010; UNESCO, 2017)—“boys are better at math and science than girls” and “science and engineering careers are masculine domains”.

6.2.3. Double Standards, Status Characteristics Theory and the Measurement of Gender Biases

Our procedure to detect possible gender biases in the attribution of mathematical ability and in the recommendation to study engineering can be understood in terms of the “double standards” approach. Double standards is the practice of using different requirements to interpret the same evidence and, in particular, applying stricter requirements to members of devalued groups (Foschi, 2000).

Status characteristics theory (SCT) directly addresses the double standards phenomenon. As defined by SCT (Correll & Ridgeway, 2003; Correll et al., 2007), a status characteristic is a categorical distinction among people (for instance, depending on their gender), that has attached to it widely held beliefs in the culture that associate greater status worthiness and competence with one category of the distinction (men) than with another (women). A status characteristic becomes salient when it differentiates those in the setting or because the characteristic is believed to be directly relevant to the task at hand (“men have a greater facility for mathematics”). The theory argues that actors then implicitly use the salient characteristic to guide their behavior and evaluations. The result is biased evaluations, where a stricter standard is used when evaluating the lower status group (in our experiment, the female target).

On the other hand, the SCT distinguishes between diffuse status cues (gender, age, race, etc.) and specific status cues (specific information about skills, abilities, etc.). Koch et al. (2015) argue that stereotyping against women may be more important when there is little information available about the individual. In this case the decision maker tends to rely more on gender (a diffuse status cues) as the basis for decision. In our research we present relatively little information to the participants about the target, so gender stereotypes are expected to become more influential.

In our research we also consider the possibility that gender biases, or double standards, may vary depending on the level of the target’s academic record. We think that the margin that participants have to interpret what is the mathematical ability or the suitability of the target to study engineering is greater when the target has an intermediate academic record than when he/she has a high one. For this reason, it seems plausible that greater biases may appear in the first case than in the second. We call this phenomenon “differential double standards”.

There is an important experimental literature aimed at detecting gender biases (double standards) in the labor market. For instance, in the laboratory experiment of Correll et al. (2007), participants evaluated application material for a pair of same-gender equally qualified job candidates who differed in their parental status. They found that mothers (compared with non-mothers) were penalized on a host of measures (perceived competence, recommended starting salary, etc.). A similar result was obtained in the experimental research of Cuddy et al. (2004). On the other hand, in Vandello et al. (2013), based on an experimental design similar to that of Cuddy et al. (2004), participants evaluated hypothetical targets who sought a flexible work arrangement after the birth of a child. Flexibility seekers were given lower job evaluations than targets with traditional work arrangements (flexibility stigma). Other studies in this line are those of Fuegen et al. (2004), Moss-Racusin et al. (2010, 2012), Rudman and Mescher (2013) and Hoover et al. (2019).

Following this line of experimental research, in this article we intend to use a design with some aspects in common with that of Cuddy et al. (2004) and Vandello et al. (2013). However, in our research participants have to evaluate mathematical ability and have to recommend to a greater or lesser extent a series of university degrees to each of the four targets (four profiles of a 15 year old student). In other words, in the other studies the objective was to detect and quantify gender biases in the evaluation of the professional merits of the targets, while in our research we try to detect gender biases in the attribution of mathematical ability and the recommendation to study engineering. Our experimental design is new both within the experimental literature, just quoted, and in the literature on girls and women in STEM.

6.3. Hypotheses

Hypothesis 1. There is a gender bias in the attribution of mathematical ability. Faced with an identical target (a fictitious 15 year old student), the participants (on average) attribute a greater degree of mathematical ability to the male target than to the female target.

Hypothesis 2. There is a gender bias in the recommendation to study engineering. Faced with an identical target (a fictitious 15 year old student), the participants (on average) recommend studying engineering more to the male target than to the female target.

Hypothesis 3. Gender biases (in attributing mathematical ability and recommending engineering) can take the form of differential double standards. These gender biases (or double

standards) in favor of the male target are higher when the target's academic record is intermediate compared to when it is high (the participants penalize the male target less than the female target for having an academic record that is not high).

Hypothesis 4. The perception that the target has more mathematical ability (compared to verbal expression and communication) positively influences the recommendation to study engineering (as a consequence of the social perception of the importance of math skills for successful engineering (Haase, Chen, Sheppard, Kolmos, & Mejlgaard, 2013)). The perception that the target has more mathematical ability is a mediating variable in the total effect of the target's gender on the recommendation to study engineering. Indeed, being a male target has a direct positive effect on the participant's recommendation (to the target) to study engineering, but it also has an indirect positive effect through an attribution (to the target) of greater mathematical ability.

Hypothesis 5. In a more traditional society (in particular in gender attitudes), such as that of Barranquilla, compared with that of Madrid, the intensity with which both biases (in attributing mathematical ability, in recommending careers) are manifested is greater.

6.4. Method

6.4.1. Participants

1,714 university students participated in the experiment. 754 (44%) were in the Universidad Complutense de Madrid and in the Universidad Politécnica de Madrid, both located in the region of Madrid, Spain; and 960 (56%) were in the Universidad del Norte, located in the Caribbean Coast region, Colombia. Sampling was performed in each institution separately (following the same protocol), during the period February 2018-May 2018. All the participants were studying bachelor or master's degrees (411 (24%) in the field of engineering, 706 (41.2%) in the fields of social sciences and humanities, and 597 (34.8%) in the field of health sciences). 856 (49.9%) were female students and 858 (50.1%) were male students. In the Spanish sample 10.8% of the students were immigrants and 7% were foreign students; in the Colombian sample these figures were 0.9% and 0.8%, respectively. The average age of participants was 21.6 in Spain and 22.4 in Colombia.

6.4.2. Design

Our design is a 2x2 factorial. Factor 1 is the gender of the target (male, female) and factor 2 is the level of the academic record of the target (intermediate, high). Study participants were randomly assigned to each of these four experimental conditions. We also considered three factors concerning the characteristics of the participants: Country of residence (Spain, Colombia), sex (female, male), and study area (engineering, social sciences and humanities, health sciences).

6.4.3. Materials and Variables

Questionnaire

Participants had to complete one questionnaire (in the Spanish language). It presented participants with a brief description of a fictitious 15-year-old student (called María or Manuel, very common female and male names in Spain and Colombia). The target was described as a 15-year-old student studying the last year of compulsory secondary education, in a “colegio concertado” (private but public funded school) in the case of Spain, and in a private school in the case of Colombia. The description also included the academic record of the student for the current academic year. There were two levels of academic record (high, with an average grade of 8.95 on a scale of 0 to 10; and intermediate, with an average grade of 6.95). The structure of the grades, or relative grades (of the 11 subjects that appeared in the academic record) was kept constant across the two academic record levels (the detailed presentation of these academic records is in an appendix as “Supplementary data 1”). There was also some gender-neutral information about the target’s personality traits and tastes (“Manuel/María is a rather reflective, curious person; with an open mind about knowledge and new experiences. He/she likes music and movies. He/she plays tennis and paddle tennis”).

At the top of the questionnaire, among other things, participants were told “Please read the profile description of this student carefully. Imagine that you are one of his/her tutors and that this student has asked you for a (university degree choice) recommendation. What recommendation would you give him/her taking into account what you have read about his/her academic record, hobbies, etc. and your criteria about what you consider to be the most suitable university degrees for a student with these characteristics?”

After the description of the target, the questionnaire contained questions about mathematical ability and career recommendations of the target. In addition, a set of demographic questions was added.

Mathematical Ability

The students were asked “despite the little information you have, do you think that Manuel/María is equally qualified for mathematical reasoning and for verbal expression and communication?”. The response options were: 1 = “Manuel/María has much less talent for mathematics than for verbal expression and communication”; 2 = “... has less talent for mathematics than for verbal...”; 3 = “... has the same talent for mathematics as for verbal...”; 4 = “... has more talent for mathematics than for verbal...”; and 5 = “... has much more talent for mathematics than for verbal...”. The single item variable Mathematical Ability (ranging from 1 to 5) is the first dependent variable in our study.

Recommend Engineering

Participants rated 19 university degrees. They were asked “In the next 19 questions you are asked to indicate the extent to which you would advise Manuel/María to choose each of these degrees”. The response scale ranged from 1 = “I would strongly advise against it” to 10 = “I would strongly advise it”. These 19 degrees are listed in tables 6.2 and 6.3. In our analysis we are only going to use these two items: Recommend Mechanical Engineering and Recommend Computer Engineering²³. We calculated the average of these two items and we obtained the two-item measure Recommend Engineering, ranging from 0 to 10 (Spearman correlation coefficient of the two items, $r_s(1712) = .59, p < .001$; Cronbach’s alpha = .76).

Regarding the target, there were two factors:

Male Target, a dichotomous variable (1 = Manuel; 0 = María).

High Academic Record, a dichotomous variable (1 = high academic record; 0 = intermediate academic record).

Regarding the participants, there were three factors:

²³ We have focused on the two highest male-female ratios that correspond to Recommend Mechanical Engineering and Recommend Computer Engineering in Spain; that were also high in Colombia.

Spanish Participant, a dichotomous variable (1 = Spanish participant; 0 = Colombian participant).

Female Participant, a dichotomous variable (1 = female participant; 0 = male participant).

Participant's Study Area, the field that the participant was studying. It had three categories (1 = engineering; 2 = social sciences and humanities; 3 = health sciences). In fact, we grouped a broader set of courses taken by the participants into these three categories. In the case of Spain, these were: Civil and Territorial Engineering, Computer Science Engineering; Economics, Business Administration and Management, Banking and Quantitative Finance, Actuarial and Financial Science (master), Business Finance (master); English Studies, Philosophy; Medicine, Pharmacy, and Biology. In the case of Colombia, Industrial Engineering, Electrical and civil Engineering; Economics, Business Administration, Tourism, Political Science, International relations, Sociology, Social Communication; Medicine, Psychology, Chemistry, and Nutrition.

Other variables

Age (age in years), which was one of the control variables in the path analysis.

Health Sciences (the participant was doing studies in the field of health science), a dummy coded (1 = yes; 0 = no) variable that was used as a moderating variable in the path analysis.

6.4.4. Procedure

The questionnaires were distributed in class to the students who decided to participate voluntarily in the experiment. The four experimental conditions were randomly assigned (male-high = 25.2% ($n = 432$); female-high = 25.3% ($n = 433$); male-intermediate = 24.7% ($n = 423$); female-intermediate = 24.8% ($n = 426$)). The questionnaires were administered at the beginning of the corresponding class, with the teacher's permission. Participants were recruited with a cover story that they were participating in a study within the field of education, which explored the process by which adolescents choose the university career they are going to study. The average time to complete the questionnaire was 10 minutes. The same protocol was followed in all three universities. When giving instructions on how to fill out the questionnaire, among other things the researchers guided the participants saying "please, do not put what you would

like to study, but what you would recommend to a young person with the characteristics that we are going to show you in the questionnaire”.

The data collection was reviewed and approved by the “ethics committee” (an institutional review board for compliance with standards for the ethical treatment of human participants) of the Faculty of Economics and Business of the Complutense University of Madrid.

6.4.5. Internal and External Validity

Regarding the validity of our research, we consider it has a high degree of internal validity, derived from the controlled experiment (2x2 factorial) that we have run, which has allowed us to make a series of inferences regarding cause-effect relationships. Regarding its external validity, we think there are several reasons why the fact that the participants are university students does not prevent our conclusions from being generalizable to other groups. First, unlike other studies within the field of EVT (where it is essential to work with parents, tutors, children), in our research our intention was specifically to capture possible biases (based on existing stereotypes) in the recommendations offered by any “potential” tutor to a “fictitious” 15-year-old target. For instance, even if we had conducted the experiment with real parents, these, in any case, would have evaluated the profile of the fictitious target and not that of their own children. Second, university students are adults and educated human beings and, like the rest of the population, are depositaries of social norms and stereotypes (explicit or implicit) existing in their environment. Third, even university students can have real-life experience in advising others about what to study (for example, their younger siblings, cousins, partners, friends, etc.). Fourth, in the experimental literature aimed at detecting gender biases (double standards) in the labor market (Cuddy et al., 2004; Correll et al., 2007; Vandello et al., 2013; Hoover et al., 2019), the usual procedure is to use samples of university students. In any case, and given the characteristics of our participants (adults, young people, with a high cultural level and relatively socially privileged), we consider that the biases detected also hold for other social groups, but, in terms of their intensity, our results constitute the low end of what in reality exists. In other words, if the bias is not significant in this group, it can be significant in other social groups.

6.4.6. Analytical strategy

In the results section we used a five-way ANOVA analysis with SPSS (Arbuckle, 2013) to test hypotheses 1, 2 and 3. We added three factors (related to the characteristics of the participants) that contributed to reduce the variance in the data to our initial 2x2 factorial design (we were also interested in some of the interactions obtained). In this way, a 2 (Male Target: Manuel or María) x 2 (High Academic Record: high or intermediate) x 2 (Spanish Participant: Spanish or Colombian) x 2 (Female Participant: female or male) x 3 (Participant's Study Area: engineering, social sciences and humanities; health sciences) ANOVA was conducted (see Table 6.1). On the other hand, in order to test hypothesis 4 we run a path analysis (through structural equation modeling).

6.5. Results

6.5.1. Gender bias in the attribution of mathematical ability

Hypothesis 1 stated that faced with an identical target (a fictitious 15 years old student), the participants (on average) would attribute a greater degree of mathematical ability to the male target (Manuel) than to the female target (María).

Table 6.1 shows the results of the five-way ANOVA analysis. Although the main effects and all the interactions were estimated, only the main effects and some of the relevant interactions for our analysis appear in the table. The variable Male Target had a statistically significant effect on Mathematical Ability ($F(1, 1657) = 46.93, p < .001, \eta p^2 = .03$). The estimated marginal means were 3.05 when the target was María and 3.42 when the target was Manuel. This result shows that there was a gender bias in favor of the male target in the attribution of mathematical ability (relative to verbal expression and communication).

Table 6. 1. Five-way ANOVA for Recommend Engineering and Mathematical Ability

Significant Effects	Mathematical Ability				Recommend Engineering			
	<i>F</i>	<i>df</i>	<i>p</i>	ηp^2	<i>F</i>	<i>Df</i>	<i>p</i>	ηp^2
Male Target	46.93	1, 1657	< .001	.03	60.39	1, 1664	< .001	.04
High Academic Record	115.43	1, 1657	< .001	.07	65.17	1, 1664	< .001	.04
Spanish Participant	96.25	1, 1657	< .001	.05	1.32	1, 1664	.252	.00
Female Participant	0.35	1, 1657	.556	.00	3.73	1, 1664	.054	.00
Participant's Study Area	0.25	2, 1657	.776	.00	40.52	2, 1664	< .001	.05
Male Target x High Academic Record	4.46	1, 1657	.035	.00				
Male Target x Spanish Participant	10.54	1, 1657	.001	.01	4.43	1, 1664	.035	.00
Male Target x Female Participant	4.00	1, 1657	.046	.00				
Spanish Participant x High Academic Record	18.16	1, 1657	< .001	.01	36.33	1, 1664	< .001	.02
Spanish Participant x Participant's Study Area					4.54	2, 1664	.011	.01
High Academic Record x Participant's Study Area	4.09	2, 1657	.017	.00	17.45	2, 1664	< .001	.02
Spanish Participant x High Academic Record x Participant's Study Area					17.74	2, 1664	< .001	.02

Note. Main and significant effects are shown.

However, as indicated by the statistically significant result of the interaction Male Target x Spanish Participant ($F(1, 1657) = 10.54, p = .001, \eta p^2 = .01$), gender bias is different in the Spanish and Colombian samples. Figure 6.1 shows that the slope of the line corresponding to the Colombian participants is higher than that corresponding to the Spanish participants, which reveals that gender bias in favor of the male target in the attribution of mathematical ability was considerably greater in the Colombian sample than in the Spanish one.

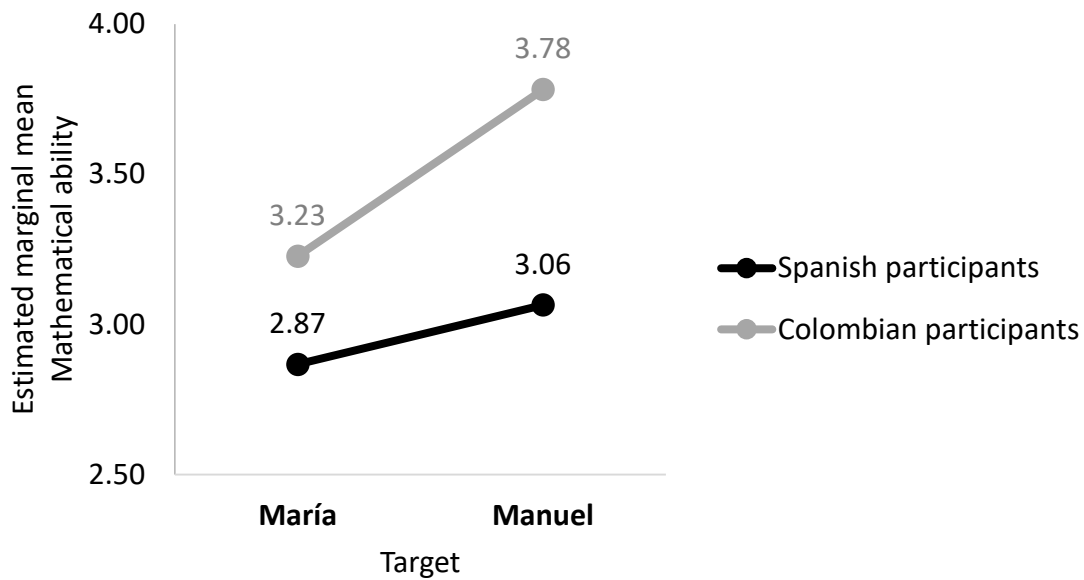


Figure 6. 1. Differences in the Perception of Target's Mathematical Ability According to Target' Gender and Participant's Country.

A second aspect to highlight is the interaction Male Target x Female Participant ($F(1, 1657) = 4.00, p = .046, \eta p^2 = .00$). This result points to the fact that male participants tend to have a higher gender bias in the attribution of mathematical ability than female participants. However, this difference is only important in the case of the Spanish sample. Figure 6.2 shows that in the case of the Spanish sample, it is the male participants who present this bias, and not the female participants. Indeed, in the one-way ANOVA conducted for the Spanish sample there was a significant effect of Male Target on Mathematical Ability only among the male participants ($F(1, 342) = 11.69, p < .001, \eta p^2 = .03$) and not among the female participants ($F(1, 399) = .09, p = .760, \eta p^2 = .00$).

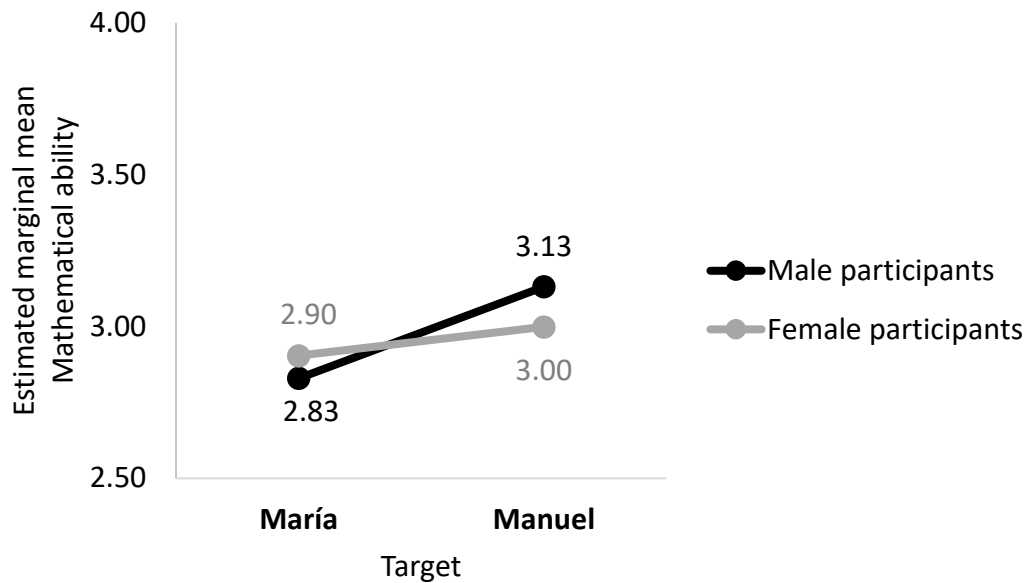


Figure 6. 2. Differences in the Perception of Target's Mathematical Ability According to Target' Gender and Participant's Gender. Spanish Sample.

6.5.2. Gender bias in recommendations to study engineering

Hypothesis 2 stated that faced with an identical target (a fictitious 15 year old student), the participants (on average) would recommend studying engineering more to the male target than to the female target.

From a descriptive point of view, tables 6.2 and 6.3 show (for Spain and Colombia, respectively) the average scores obtained for each of the 19 careers (recommendation scales) included in our design. We also provide the male-female score ratio, ordered from highest to lowest male-female recommendation ratio.

In Spain the two highest male-female ratios corresponded to Recommend Mechanical Engineering (M-F ratio = 132.4%) and Recommend Computer Engineering (M-F ratio = 131.8%). In Colombia, high male-female ratios were also obtained for the two engineering careers (120.2% and 119.7%, respectively). However, even higher male-female ratios were obtained for Recommend Business Administration (146.5%) and Recommend Economics (143.8%). This result may indicate that in an environment such as that of Barranquilla, business management and activities related to economics are perceived as markedly masculinized activities (much more than in the Madrid environment).

These results show that, for both the Spanish and Colombian samples, there is a clear gender pattern in the recommendation of careers to our target student. More technology-related careers were recommended to a greater extent to Manuel, while several careers stereotyped as feminine were recommended to a greater extent to María. It is also worth noting that, within STEM, the gender bias was detected more in technology-related careers and not so much in those related to health sciences. These first results point to the confirmation of hypothesis 2.

Table 6. 2. Means and Standard Deviations for Recommendations of Majors and Mathematical Ability by Target's Gender. Spanish Sample

	Target						Male-female ratio
	Female		Male		All		
	(n = 385)		(n = 369)		(n = 754)		
	M	SD	M	SD	M	SD	
Recommend mechanical engineering	4.30	3.12	5.70	3.06	4.99	3.17	132.4%***
Recommend computer engineering	4.58	3.07	6.04	3.00	5.29	3.12	131.8%***
Recommend physics	5.01	2.89	5.83	2.70	5.41	2.82	116.4%***
Recommend chemistry	5.23	2.76	5.77	2.45	5.49	2.63	110.3%*
Recommend architecture	4.96	2.66	5.27	2.62	5.11	2.64	106.2%
Recommend economics	5.35	2.59	5.54	2.40	5.44	2.50	103.5%
Recommend business administration	5.08	2.86	5.21	2.73	5.14	2.80	102.7%
Recommend sport sciences	4.34	2.91	4.43	2.86	4.38	2.89	102.2%
Recommend medicine	6.25	2.90	6.31	2.80	6.28	2.85	101.0%
Recommend biology	5.86	2.62	5.86	2.26	5.86	2.45	100.0%
Recommend law	5.27	2.69	5.13	2.57	5.20	2.63	97.2%
Recommend history	4.60	2.83	4.42	2.78	4.51	2.81	96.0%
Recommend social work	5.60	3.12	5.34	3.08	5.47	3.10	95.3%
Recommend pharmacy	5.82	2.75	5.54	2.56	5.68	2.66	95.2%
Recommend psychology	7.14	2.22	6.69	2.44	6.92	2.34	93.6%*
Recommend journalism	6.50	2.74	6.02	2.88	6.26	2.82	92.7%*
Recommend philology	4.91	3.00	4.48	2.90	4.70	2.96	91.1%*
Recommend primary education	5.48	2.85	4.88	2.97	5.19	2.92	89.0%**
Recommend fine arts	5.09	3.05	4.49	3.11	4.80	3.09	88.3%**
Mathematical Ability	2.90	0.65	3.02	0.69	2.96	0.67	104.4%**

Note. Mann–Whitney U test for differences in the distributions of female and male target.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6. 3. Means and Standard Deviations for Recommendations of Majors and Mathematical Ability by Target's Gender. Colombian Sample

	Target						Male-female ratio
	Female		Male		All		
	(n = 474)		(n = 486)		(n = 960)		
	M	SD	M	SD	M	SD	
Recommend business administration	4.46	2.66	6.54	2.19	5.51	2.64	146.5%***
Recommend economics	4.48	2.89	6.44	2.20	5.48	2.74	143.8%***
Recommend mechanical engineering	4.38	2.71	5.27	2.40	4.83	2.59	120.2%***
Recommend computer engineering	4.29	2.69	5.14	2.51	4.72	2.63	119.7%***
Recommend physics	4.20	2.65	5.01	2.61	4.61	2.66	119.2%***
Recommend architecture	4.92	2.17	5.60	2.44	5.29	2.34	113.9%***
Recommend law	5.19	2.92	5.87	2.54	5.53	2.76	112.9%***
Recommend chemistry	4.85	2.39	5.11	2.63	4.98	2.52	105.2%
Recommend sport sciences	4.31	2.18	4.53	2.18	4.42	2.18	105.1%
Recommend medicine	4.70	2.24	4.85	2.58	4.78	2.42	103.1%
Recommend psychology	5.47	2.59	5.30	2.53	5.38	2.56	96.9%
Recommend pharmacy	4.93	2.49	4.69	2.49	4.81	2.49	95.1%
Recommend biology	4.67	2.31	4.35	2.37	4.51	2.34	93.2%*
Recommend history	6.43	2.39	5.63	2.49	6.03	2.47	87.6%***
Recommend social work	6.28	2.64	5.23	2.52	5.75	2.63	83.2%***
Recommend journalism	6.31	2.48	5.22	2.42	5.76	2.50	82.8%***
Recommend philology	5.68	2.52	4.29	2.24	4.98	2.48	75.6%***
Recommend primary education	5.92	2.50	4.26	2.45	5.08	2.61	72.0%***
Recommend fine arts	6.30	2.60	4.38	2.21	5.33	2.59	69.5%***
Mathematical Ability	3.23	1.25	3.80	1.04	3.52	1.18	117.7%***

Note. Mann–Whitney U test for differences in the distributions of female and male target.

* $p < .05$. ** $p < .01$. *** $p < .001$.

After this descriptive perspective we return to the results of the five-way ANOVA analysis (Table 6.1). The variable Male Target had a statistically significant effect on Recommend Engineering ($F(1, 1664) = 60.39, p < .001, \eta p^2 = 0.04$). The estimated marginal means were 4.53 when the target was María and 5.57 when the target was Manuel. This result brings to light that there was a gender bias in favor of the male target in the recommendation to study engineering (that is, hypothesis 2 is confirmed).

Nevertheless, as suggested by the descriptive results, a statistically significant result is obtained for the interaction Male Target x Spanish Participant ($F(1, 1664) = 4.43, p = .035, \eta p^2 = .00$). Indeed, Figure 6.3 shows that the slope of the line corresponding to Spanish participants is greater than that corresponding to the Colombian participants.

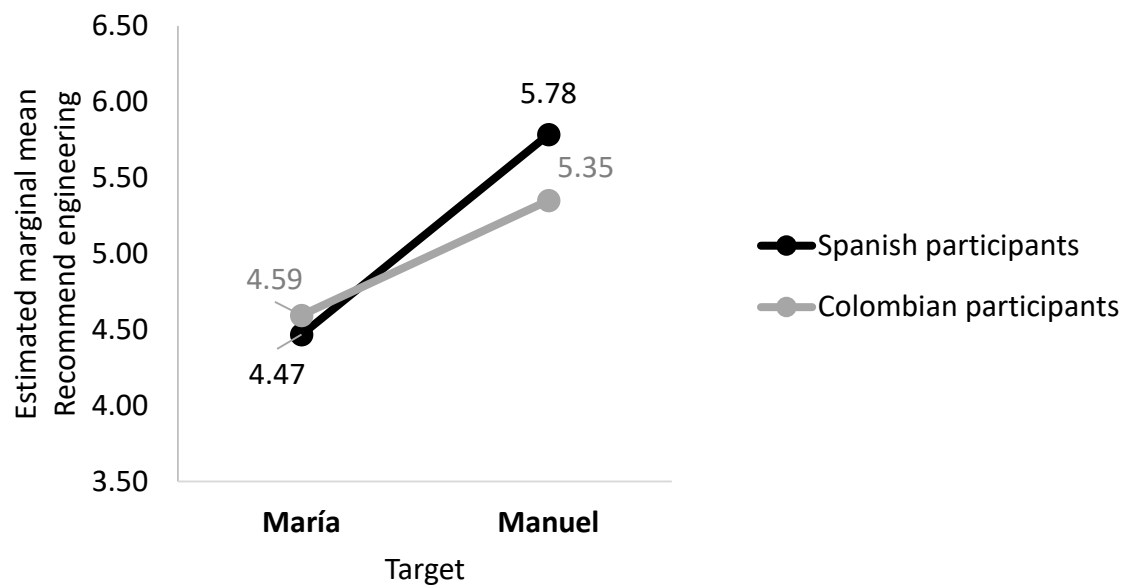


Figure 6. 3. . Differences in the Recommendation to Study Engineering According to Target' Gender and Participant's Country.

On the other hand, in the specific case of the Colombian participants, a significant interaction with High Academic Record and Participant's Study Area was obtained. These detailed results (and its possible meaning) are presented in an appendix as "Supplementary data 3".

6.5.3. Differential double standards

The Hypothesis 3 established that gender biases (or double standards) in favor of the male target would be higher when the target's academic record is intermediate compared to when it is high (the participants would penalize the male target less than the female target for having an academic record that is not high). We called this situation “differential double standards”.

Our results provide evidence on this hypothesis only for the Colombian sample. Regarding the dependent variable Mathematical Ability, in Table 6.1, where a five-way ANOVA analysis was performed for the entire sample, a statistically significant result was obtained for the interaction Male Target x High Academic Record ($F(1, 1657) = 4.46, p = .035, \eta p^2 = .00$). However, when performing the same analysis for the subsamples of Spain and Colombia, a statistically significant result was obtained only for the Colombian participants ($F(1, 959) = 7.34, p = .007, \eta p^2 = .01$). Figure 6.4 shows the graphs corresponding to this interaction.

As can be seen, the line corresponding to high academic record is located higher than the intermediate academic record, which shows that, in general, Colombian participants attributed more mathematical skills to the profile that had a high than the one he had an intermediate academic record. But, in addition, the two lines are not parallel. The line corresponding to the intermediate academic record has a greater slope than that corresponding to the high academic record, which shows that for the Colombian sample the gender bias in favor of Manuel was higher when the target's academic record was intermediate. Note also that the vertical distance between the two lines is greater for María than for Manuel, which means that the Colombian participants penalized (in attributing mathematical ability) Manuel less than María for having an academic record that is not high.

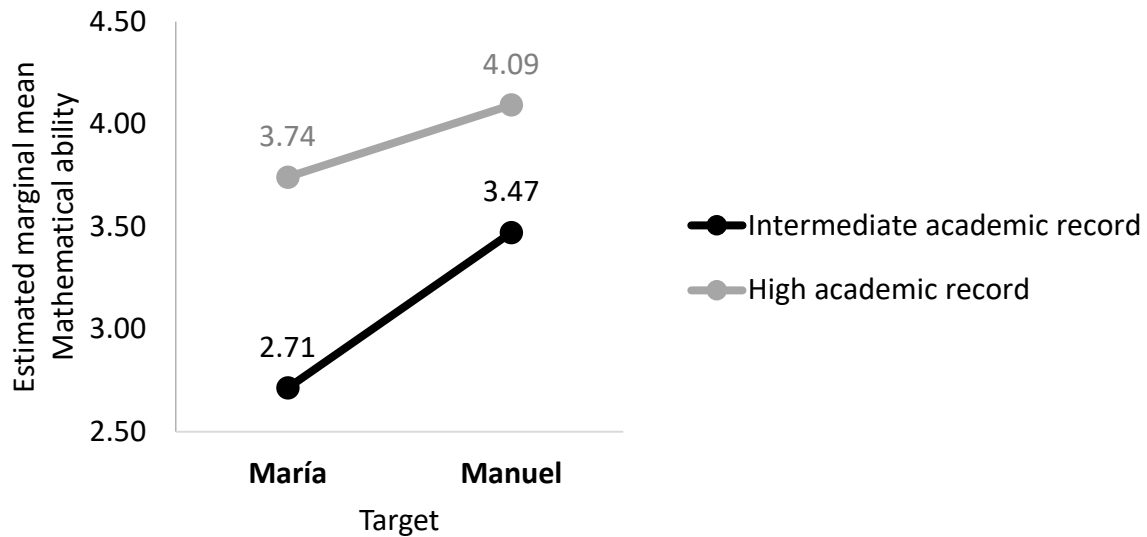


Figure 6. 4. Differences in the Perception of Target’s Mathematical Ability According to Target’ Gender and Target’s Academic Record. Colombian Sample.

Regarding the dependent variable Recommend Engineering, for the Colombian sample we also obtained an interaction Male Target x High Academic Record that was statistically significant ($F(1, 959) = 4.44, p = .035, \eta p^2 = .00$). This is evidenced in Figure 6.5, which reveals, on the one hand, that there was a differential double standards; but shows, on the other hand (through vertical distance between the two lines), that the Colombian participants did not penalize (in recommending studying engineering) Manuel for having an academic record that was not high, but they penalized María for this same reason.

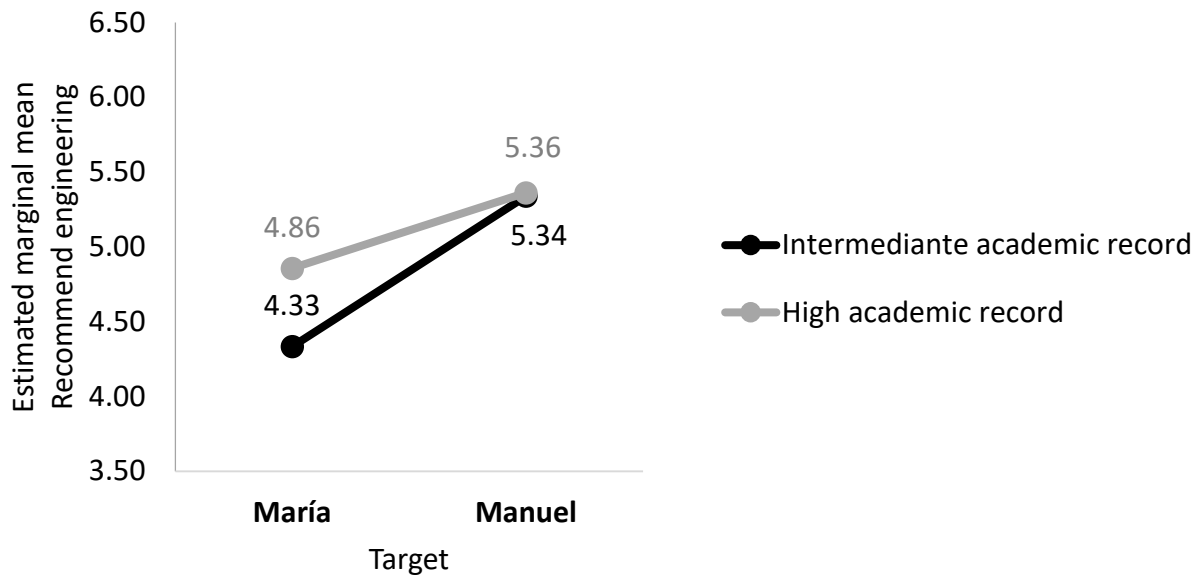


Figure 6. 5. Differences in the Recommendation to Study Engineering According to Target' Gender and Target's Academic Record. Colombian Sample.

6.5.4. Mathematical Ability as a Mediating Variable

In this section we wanted to test the hypothesis 4 (mathematical ability is a mediating variable in the total effect of the target gender on the recommendation to study engineering). For this, we ran a path analysis (through structural equation modeling) for the dependent variable Recommend Engineering (Figure 6.6) separately in Spain and Colombia. These models had two main characteristics: first, they were simple mediation models with one outcome variable. Second, similar to what we did in the previous section, in some paths we introduced some moderating variables. For the Spanish model we considered that the effect of Male Target on Mathematical Ability was moderated by Female Participant; for the Colombian sample we considered that the effect of Male Target on Mathematical Ability was moderated by High Academic Record, and that the effect of Mathematical Ability on Recommend Engineering was moderated by Health Sciences. These moderating variables also appear in Figure 6.6.

These two path analyses were performed with the Amos 22.0 program (Arbuckle, 2013). The models corresponding to the Spanish and Colombian samples presented an acceptable fit (Spain: $\chi^2(1) = 2.01, p = .157, TLI = .98, RMSEA = .04, CFI = 1.00$ and $SRMR = .00$; Colombia: $\chi^2(4) = 3.48, p = .481, TLI = 1.00, RMSEA = .00, CFI = 1.00$ and $SRMR = .01$).

Male Target had a statistically significant positive direct effect on Recommend Engineering in Spain (.21) and in Colombia (.22). But it also had a statistically significant

positive indirect effect on Recommend Engineering through the mediating variable Mathematical Ability. Indeed, Male Target had a statistically significant positive effect on Mathematical Ability (only for male participants, in the case of Spain; with a more intense effect when the target had an intermediate academic record, in the case of Colombia). And Mathematical Ability had a statistically significant positive effect on Recommend Engineering (only for participants who studied engineering and social sciences, in the case of Colombia). For example, when the participant was male the conditional indirect effect of Male Target on Recommend Engineering was .05 for Spain; or when the academic record was intermediate and the study area was not health sciences, the conditional indirect effect of Male Target on Recommend Engineering was .03 for Colombia (the complete list of conditional effects is available in the appendix as “Supplementary data 2”).

The reason why in Colombia the participants who were studying health sciences presented anti-intuitive result (they did not recommend studying engineering to a higher extent to those who had more mathematical ability) is addressed in the appendix as “Supplementary data 3”.

In short, the path analysis performed in this section seems to support hypothesis 4 for both the Spanish and the Colombian samples: being a male target has a direct positive effect on the participant’s recommendation (to the target) to study engineering, but it also has an indirect positive effect through an attribution (to the target) of greater mathematical ability.

6.6. Discussion

In the current study we have offered causal empirical evidence about the existence of a gender bias in the attribution of mathematical ability and in the recommendation to study engineering. Presenting the same information about a 15-year-old target person with a female or male name activated the existing gender stereotypes concerning girls and technological STEMs. This led (on average) to a biased attribution of mathematical ability and to a biased recommendation to study engineering, both in favor of the target with a male name. For instance, taking the total sample of participants, when the male target had an intermediate academic record, the estimated marginal mean for Recommend Engineering was 5.16, while the figure corresponding to the female target was very similar (5.12), but only when she had a high academic record. Expressed in terms of double standards: on average, the female target needs a higher academic record before she is recommended to study engineering with the same intensity as the male target. On the other hand, we have also shown that, in fact, the biased attribution of mathematical ability is one of the mechanisms (mediating variable) through which the target's male or female name influences the participants' recommendations to study engineering.

It is worth highlighting five additional aspects: first, in the context of the EVT, there is a substantial body of research (Sáinz et al., 2012; Eccles, 2014) about how parents, teachers, and tutors transmit their beliefs and attitudes, and shape female and male adolescents' choice of course. However, the process through which existing stereotypes generate biased attributions or recommendations made by tutors has not been widely studied. Thus, we consider that our experimental analysis contributes to generating new knowledge regarding one of the main elements included in the EVT framework.

Second, the cognitive process (raised by the SCT) through which our target having a female or male name activates existing gender stereotypes can also be captured using Bem's theory of gender schema (Bem, 1981; Sáinz et al., 2012). According to this approach, gender schemas allow individuals (and to a greater extent "sex-typed" individuals) to take shortcuts in interpreting the information they receive and provide them with prescriptive information about what is considered appropriate for each gender (in the form of stereotypes).

Third, the country of residence of our participants had some explanatory capacity. We observed, in general, a more intense gender bias among the students in Barranquilla than among those in Madrid. In the case of Barranquilla, the gender bias was accompanied by the

“differential double standards” phenomenon (penalizing the male target less than the female target for having an academic record that is not high), both for the attribution of mathematical ability and for the recommendation to study engineering. And in Barranquilla there were two careers that were recommended with a large male bias (Economics and Business Administration), which were unbiased recommended careers in Madrid. It is possible that these differences have to do with a greater persistence of traditional social and gender norms in Barranquilla, as compared to Madrid, as well as with the presence of some differential aspects in the content of those traditional social norms.

Fourth, in line with the fact that, in general, women (on average) tend to have slightly less traditional gender attitudes than men (Bolzendahl & Myers, 2004), in the Madrid sample it was noticeable that the bias against the female target in the attribution of mathematical ability only occurred among the male participants and not among the female participants.

And fifth, another interesting aspect that we detected in our research is that, for both the Spanish and Colombian samples of participants, STEM careers (both technological and health sciences) were recommended to a greater degree when the target had a high academic record (and not so much when they had an intermediate one). This result seems to be capturing the idea or stereotype that “to study science or technology you need to be a very good student; to study social sciences, humanities, etc., this is not as important”.

Although the findings of our research make relevant contributions, they do have limitations. The main limitation derives from the fact of using a sample of participants who are university students (which is the usual in the literature dedicated to the analysis of gender stereotypes and bias in experimental simulations, as Koch et al., 2015 show) and not parents or high school teachers. Although as previously stated (in the sub-section dedicated to internal and external validity), we do not believe that this compromises the external validity of the results achieved, we consider that as a future research direction it may be advisable to carry out our experimental design with parents and real teachers.

Our experimental design is perfectly compatible with vignette experiments for survey research methodology (Steiner et al., 2016; Atzmüller & Steiner, 2017), which would make it possible to include our experiment in a representative survey to parents or teachers. In addition, the vignette experiments allow adding more experimental conditions. For example, not only considering that the target has either a globally high or globally intermediate academic record, but also considering that the target is either (a) very good in math/science but not very good in

language/humanities or (b) not very good in math/science but very good in language/humanities (Bart et al., 2018).

On the other hand, for future research it may also be interesting to consider the explicit or implicit gender attitudes of the participants as a moderating variable. For instance, the effect of the target's gender on the recommendation to study engineering could be moderated by the implicit occupational gender stereotypes (White & White, 2006).

Our findings have practical implications for counselors and for public policy. A first step in neutralizing biases based on stereotypes is to be aware that we may be biased. This warning is particularly important for secondary school teachers, who accompany and advise adolescents in their career selection processes.

In this research we have shown that gender biases in the attribution of mathematical ability and in the recommendation to study engineering are still very strong. We think it is very important to generate supportive learning environments and conduct awareness campaigns in schools (for example, providing role models of women scientists), all aimed at encouraging girls to pursue mathematics and science (UNESCO, 2017). We believe that these campaigns should include parents, teachers and other tutors, who should be alert to the persistence of the bias we have analyzed here.

Finally, in order to level the playing field in STEM it is necessary to level the playing field in unpaid work. A world in which it will seem absolutely normal for us to see women in the highest STEM positions will be a world in which it will seem absolutely normal for us to see (for example) men taking leave to care for their baby. Eliminating stereotypes in science means also eliminating stereotypes in the family.

Girls' and boys' career choices is an important moment in the lives of young people, and the influence on that choice of their tutors (parents, teachers, school counselors, older siblings, etc.) can play a critical role. The present research contributes to the literature on girls' performance and interest in STEM fields by identifying a significant degree of gender bias in the advice of tutors or potential tutors. We provide experimental evidence that in societies as different as the Spanish and the Colombian there is still an important bias against girls in the recommendations to study engineering.

We hope that the present research contributes to a better understanding of this type of bias as well as to the design of strategies to prevent it.

Supplementary data 1

Table 6. 4. Subjects and grades that appeared in the academic record included in the brief description of a fictitious 15-year-old student

Subjects	Grades	
	High	Intermediate
Geography and History:	9	7
Spanish Language and Literature:	9	7
Mathematics:	9	7
English language	9	7
Physical education:	8	6
Ethical values:	10	8
Physics and chemistry:	9	7
Biology:	9	7
Economics:	9	7
Information and communication technologies:	9	7
Music:	8,5	6,5

Notes:

(1) These 11 subjects are among those included in the official curricula of compulsory secondary education in Spain and Colombia.

(2) The structure of the grades, or relative grades (of the 11 subjects that appear in the academic record) was kept constant across the two academic record levels. In this way, a distinction was made between the experimental condition “having a globally high academic record” and the experimental condition “having a globally intermediate academic record”. However, we balanced math and science scores with those of language and humanities, so that the target did not have a relatively more attractive academic record in any of these two areas.

Supplementary data 2

Complete list of conditional effects from path analysis

Table 6. 5. Direct, conditional indirect, and conditional total effects of Male Target on Recommend Engineering. Spanish sample.

Direct effect of Male Target on Recommend Engineering			
	Effect	Boot LL 95% CI	Boot UL 95% CI
	.21	.15	.28
Conditional indirect effects of Male Target on Recommend Engineering			
Mediator	Mathematical Ability		
Moderators			
Participant's Gender	Effect	Boot LL 95% CI	Boot UL 95% CI
Female	.01	-.01	.03
Male	.05	.02	.08
Conditional total effects of Male Target on Recommend Engineering			
Mediator	Mathematical Ability		
Moderators			
Participant's Gender	Effect	Boot LL 95% CI	Boot UL 95% CI
Female	.23	.16	.29
Male	.27	.20	.33

Note. Standardized coefficients.

Bootstrap sample = 5000 for percentile bootstrap confidence intervals.

Table 6. 6. Direct, conditional indirect, and conditional total effects of Male Target on Recommend Engineering. Colombian sample.

Direct effect of Male Target on Recommend Engineering				
		Effect	Boot LL 95% CI	Boot UL 95% CI
		.22	.16	.28
Conditional indirect effects of Male Target on Recommend Engineering				
Mediator	Mathematical Ability			
Moderators				
Academic Record	Participant's Study Area	Effect	Boot LL 95% CI	Boot UL 95% CI
High	Health Sciences	-.11	-.15	-.07
High	Others	.02	.00	.04
Intermediate	Health Sciences	-.16	-.22	-.10
Intermediate	Others	.03	.00	.05
Conditional total effects of Male Target on Recommend Engineering				
Mediator	Mathematical Ability			
Moderators				
Academic Record	Participant's Study Area	Effect	Boot LL 95% CI	Boot UL 95% CI
High	Health Sciences	.11	.05	.18
High	Others	.24	.18	.29
Intermediate	Health Sciences	.06	-.01	.14
Intermediate	Others	.25	.19	.30

Note. Standardized coefficients.

Bootstrap sample = 5000 for percentile bootstrap confidence intervals.

Supplementary data 3

Anti-intuitive recommendations of Colombian participants studying health science

In the specific case of the Colombian participants, an atypical result was obtained with the participants who were taking courses in the field of health science, which is evidenced in a significant effect of the High Academic Record \times Participant's Study Area interaction on Recommend Engineering ($F(1, 959) = 110.03, p < .001$). As can be seen in Figure s1, Colombian participants who were studying health sciences presented anti-intuitive recommendations, contrary to the recommendations of the rest of the participants from Colombia and Spain: If the target had a high academic record, then they recommended studying engineering to a lesser extent. Perhaps this is because these students (of majors of high scientific prestige, such as medicine), consider that high performance students should study careers like medicine, biology, etc., instead of careers such as engineering.

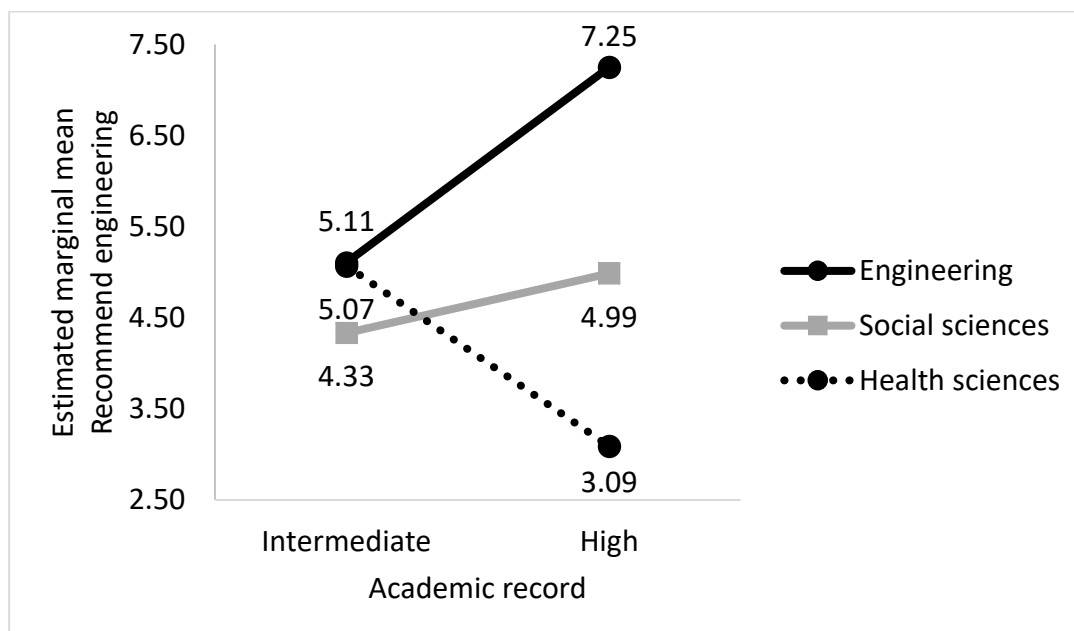


Figure 6. 7. Differences in the Recommendation to Study Engineering According to the Target's Academic Record and the Participant' Study Area. Colombian Sample.

In this same sense, for this subgroup of Colombian participants studying health science, a negative correlation was obtained between Mathematical Ability and Recommending Engineering ($r_s(433) = -.17, p < .001$), unlike the rest of Colombian and Spanish participants. Again, the reason why in Colombia the participants who studied health sciences presented anti-intuitive result (they did not recommend studying engineering to a higher extent to those who had more mathematical ability) could be that these students (of majors of high scientific prestige, such as medicine) considered that high performance students (with higher mathematical ability) should study careers like medicine, biology, etc., instead of careers such as engineering.

PART III.
GENERAL CONCLUSIONS



CONCLUSIONS, SOCIAL IMPACT AND FUTURE WORK

7.1. Conclusions

The main aim of this thesis has been to explain the gender inequalities that we find in the labor market. That is, we have tried to discover the root causes of inequality, which could be a result of the lack of shared responsibility between men and women in the household and childcare, gender stereotypes and biases, or even public and corporate policies.

The conclusions of this thesis provide knowledge about these inequalities, and can be summarized in the following points:

- In Spain, companies that support fathers who wish to reconcile work and family life reduce the pressure on those fathers to be the *ideal worker*.
- Spanish family-supportive companies provide workplaces where there tends to be less bias against the use of reconciliation measures by men. They are companies where there is a greater exemplarity in the use of reconciliation measures by males. They are, therefore, companies which, directly or indirectly, tend to produce a smaller agency gap among fathers with the consequent reduction in their levels of work-family conflict.

- Analysis of data about dual-earner couples in Spain and Iceland has revealed that mothers' leave length is not associated with fathers' involvement in the care of their children.
- Although the results show that Spanish fathers tend to be less involved in care than Icelandic fathers, in both countries the use of fathers' leave is positively associated with their involvement in care, both directly and indirectly through the reduction in working hours.
- For Spain only, but not in the case of Iceland, we highlight and present empirical evidence about the fact that the longer working week of mothers increases fathers' involvement.
- Analysis of data about university students in Spain and Ghana has revealed that young women are more likely to use reconciliation measures in the future than young men. This could mean a lower labor market participation of potential mothers compared to potential fathers.
- When examining the behavior of potential fathers and mothers in Spain and Ghana, regarding the possibility of making use of maternity and paternity leave of equal duration, our study has revealed that potential mothers would take more weeks of maternity leave than potential fathers in both countries.
- Young men welcome the hypothetical extension of paternity leave in the case of Spain, or the hypothetical existence of paternity leave in the case of Ghana. This leads us to deduce that they are predisposed to equality if they are supported by laws and even by business culture and society. Therefore, they would also be more likely to share responsibility in the care of their children if they had such support.
- We have found that the effect of attitude towards using the family-friendly measures (FFM) and the effect of perceived behavioral control towards using FFM on the intention to use FFM were higher in Spain than in Ghana for the subsample of young male students.
- In our research we detected that, for both the Spanish and Colombian samples of participants, STEM careers (both technological and health sciences) are recommended to a greater degree when the target has a high academic record (and not to the same extent when they have an intermediate one). This result seems to be capturing the idea or stereotype that "to study science or technology

you need to be a very good student; to study social sciences, humanities, etc., this is not as important”.

- We have shown that gender biases in the attribution of mathematical ability and in the recommendation to study engineering are still very strong, even in societies as different as Spain and Colombia. We think it is very important to generate supportive learning environments and conduct awareness campaigns in schools (for example, providing role models of female scientists), aimed at encouraging young women to pursue careers in mathematics and science.
- Finally, in Spain, it is noticeable that the bias against the female target in the attribution of mathematical ability occurred only among the male participants and not among females. However, we observe, in general, a more intense gender bias among the students in Colombia than among those in Spain.

7.2. Social impact of the thesis

This thesis aims to have a positive impact on society by contributing:

- 1) To **progress in shared responsibility between women and men in care activities**, as well as in the **reduction of gender inequality in the labor market** (whose final consequence is the gender wage gap).
- 2) To the elaboration of “**good practices**” for companies that encourage men in the matter of reconciliation.
- 3) To the **reduction of gender stereotypes** and biases that negatively affect women in the labor market, creating inequalities that are manifested, first, in gender segregation in the choice of studies, and second, in the consequent occupational segregation based on gender. This emphasizes the existence of gender biases in the attribution of mathematical skills and in the recommendations to study STEM (Engineering, Physics, etc.).
- 4) To the provision of empirical evidence on **the importance of the design of the parental leave system** (paternity leave and maternity leave) in order to foster shared responsibility in child care; following the recommendations of PPiiNA (2019), parental leave should be equal (for each parent), non-transferable and well paid.

7.3. Other scientific contributions and prospects for future research

Other contributions not included in the thesis:

During this PhD, the following collaborations in research articles have also been undertaken:

- i. We have co-authored a **qualitative research article** (based on semi-structured interviews—not included in the thesis—) entitled “**The use of family friendly measures by Spanish fathers: do they have capabilities for challenging gender norms?**” related to the research carried out in Chapter 3.

An abstract of the article is as follows: “The basic objective of this article is to know why Spanish fathers still use policies to reconcile work and family life less than mothers. Amartya Sen’s Capabilities framework is applied to the analysis of this agency gap in work-family balance (WFB). Males wishing to balance work and family face a series of barriers that inhibit their use of family-friendly measures (FFM), creating a gap between the theoretical right to use these measures and the real ability to do so. To address that issue, a qualitative analysis based on 59 semi-structured interviews with 43 salaried fathers, 6 salaried mothers and 10 HR managers was conducted. Three types of factors (conversion factors) that enhance/limit the capabilities of fathers to use reconciliation measures were considered: individual factors, policy and societal factors, as well as others related to workplace organizational culture.”

In this research, it is possible to deepen the analysis of the corporate barriers faced by Spanish fathers through Text Mining, that is, to extract useful information from the written text of the semi-structured interviews.

- ii. We have participated in the **creation of the database used in Chapter 5** that has been used to produce two research articles: the article presented here “Reconciliation of work and family life in Spain and Ghana: Anticipation of young adults’ use of parental leave in the future” (Chapter 5) and the article “Penalizing fathers who use family-friendly measures. A comparative study with university students from Ghana and Spain” (Fernández-Cornejo, Britwum, et al., 2019).
- iii. One outstanding aspect of this last study is that the Spanish students performed an **implicit association test (IAT)** (Greenwald, McGhee, & Schwartz, 1998). The IAT assesses attitudes without the need to ask the participant for a direct

verbal report, the responses on these measures being less likely to be affected by socially desirable responding (Hewstone, Stroebe, & Jonas, 2015). In our research, we use an IAT that is a modification of the “gender-career IAT” developed by Nosek, Banaji, and Greenwald (2002) (see also Banaji & Greenwald, 2013; Rudman & Mescher, 2013; White & White, 2006). In the analysis of the penalization against the father who uses a family-friendly arrangement (Fernández-Cornejo, Britwum, et al., 2019), explicit and implicit attitudes towards the care of the baby by the father are considered to know their effects on fathers’ penalization for using the family-friendly measures.

- iv. We have collaborated in a study on the **expectations of gender discrimination in the labor market of young university students**. In order to do so, we have used the “Survey on Social Values and Labor Expectations of University Students”, administered to a sample of 1828 university students and prepared jointly by two universities: University of Iceland (Iceland) and Complutense University of Madrid (Spain) (Fernández-Cornejo, Escot, Kabubo-Mariara, et al., 2016).

In the research, we propose a model to measure the association between students’ expected discrimination (sex discrimination in hiring, promotion or being paid less than co-workers of the opposite sex) through being a female student, their self-perception abilities, and their anticipated work-family conflict.

The study revealed that **being a female student had a direct positive effect on expected discrimination in Spain and Iceland**. Also being a female student had an indirect positive effect on expected discrimination through self-perceived abilities, and an indirect positive effect on it through self-perception abilities and the anticipated work-family conflict in both countries. Only in Iceland, being a female student had an indirect positive effect on expected discrimination through the anticipated work-family conflict (Figure 7.1).

In summary, this study has attempted to capture the knowledge of young adults regarding the gender discrimination existing in the labor market.

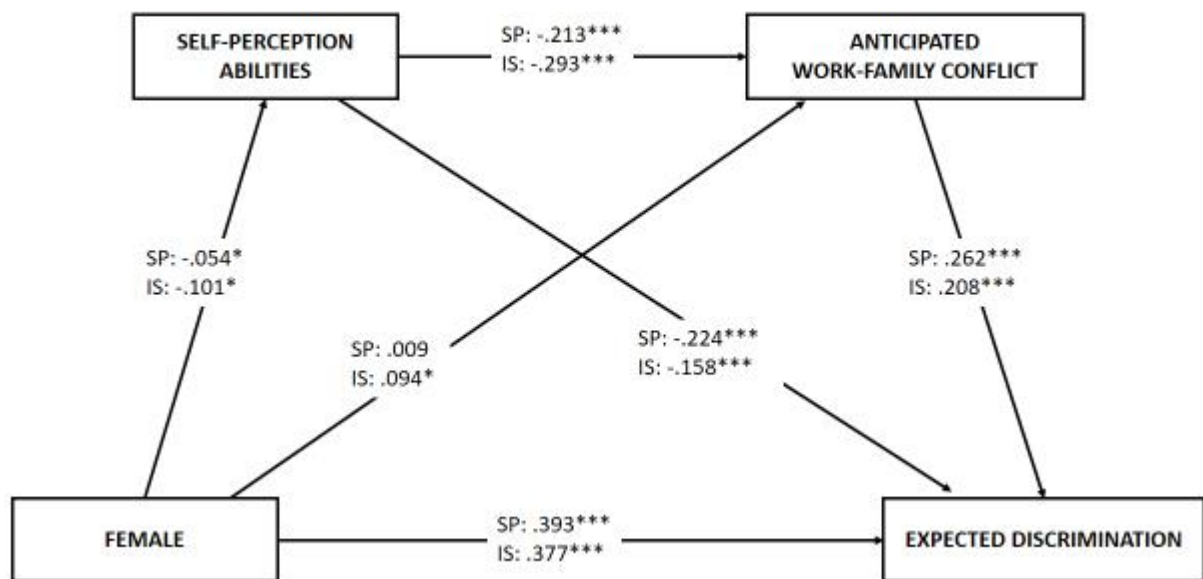


Figure 7. 1. Multigroup path analysis of the determining factors of young adults' expected discrimination for Spain and Iceland.

Note. SP: Spain ($n = 1326$); IS: Island ($n = 502$). Standardized regression weights are provided for each path; on the left is the female coefficient and on the right is the male coefficient. $*p < .05$. $**p < .01$. $***p < .001$. Control variables: Inclination sacrifice career, Involvement in childcare, Leadership aspirations, Mobility, Traditional gender attitudes, Age, Income, Religious scale, Business administration, Economics, and Law.

Prospects for future research:

Our future line of research is part of the **competitively funded research project** from the (Spanish) National Research Program, **RTI-2018-094901-B-100**, obtained by the research group Data Analysis In Social And Gender Studies And Equality Policies (AEDIPI) in the Faculty of Statistical Studies at the Complutense University of Madrid (UCM).

In this project, two of the aspects that we want to develop in depth are: firstly, what is the impact of the progressive extension of paternity leave (what is the rate of use of the new leave? What modalities are used? Are there fathers who take care of their children alone? Does this have a positive influence on the involvement of fathers? And secondly, to what extent are biases generated against fathers who use these longer leaves (as well as other reconciliation

measures). However, one aspect that we want to consider across our research is the influence of the type of masculinity that men have.

That is to say, we want to conduct a confluence between the studies on **fathering** and those on “**men and masculinities**”. Studies on men and masculinities are an area within gender and feminist studies that emphasizes the effects that different forms of masculinity can have on the attitudes, aspirations and behaviors of many men, including in these behaviors decisions to use parental leave and other reconciliation measures.

Factorial survey experiments (vignette experiments) studies are considered to be one of the most interesting advances in survey research in recent decades. The key to survey experiments is that they combine the conduct of a controlled experiment with that of a survey. We are going to use this type of methodology to examine to what extent the progressive extension of paternity leave could generate biases against working fathers who choose to use such longer leave.

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